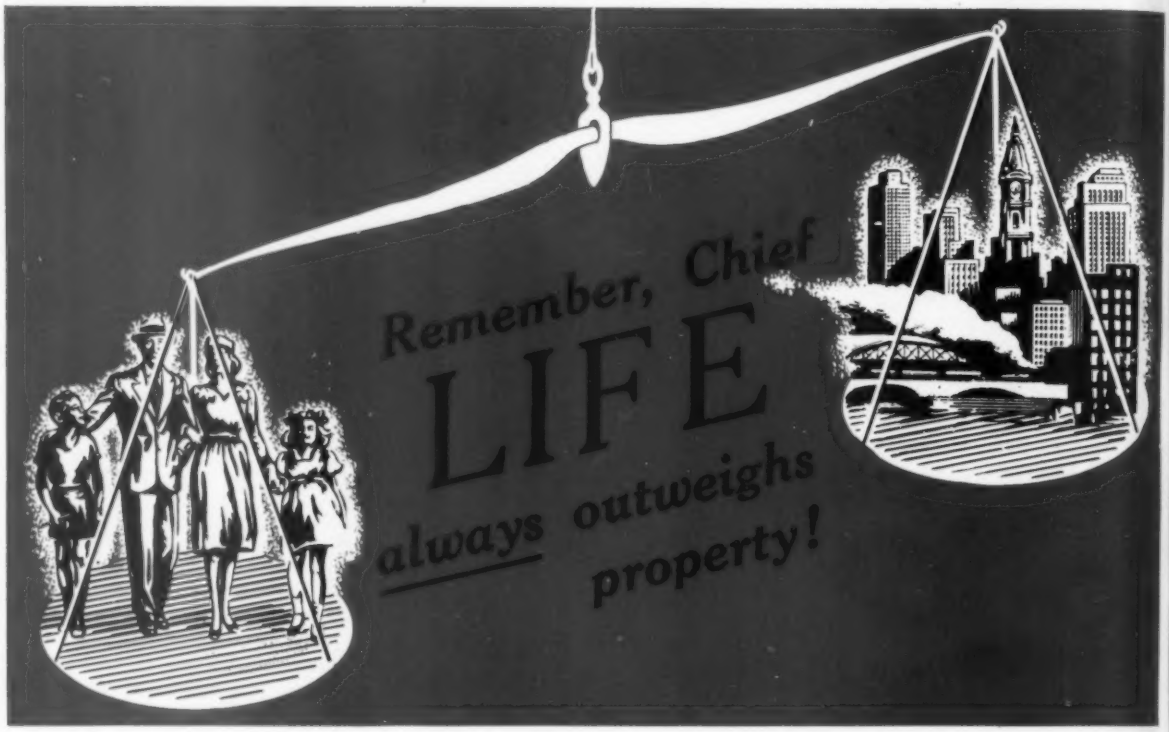
FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

AUGUST 1944

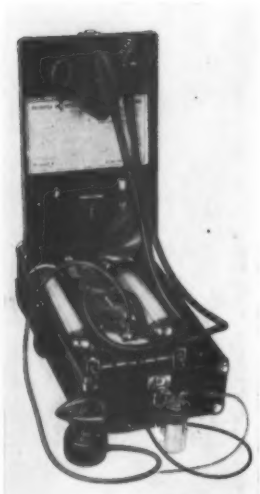
A CASE · SHEPPERD · MANN PUBLICATION



The EMERSON

RESUSCITATOR

will help you save *LIVES!*



The first rule of fire fighting is the SAVING OF HUMAN LIFE. When shock, drowning, suffocation from smoke or gas, endanger your fellow townsmen—BE READY—not only with a resuscitator—but with an EMERSON RESUSCITATOR. Don't gamble when lives are at stake, buy the best available—buy an EMERSON.

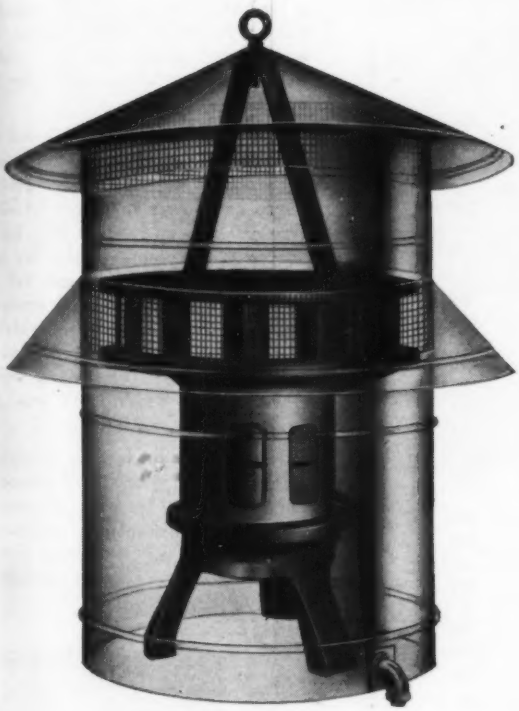
J. H. EMERSON COMPANY

Representatives in Principal Cities

22 COTTAGE PARK AVENUE • CAMBRIDGE, MASS.

A Size for Every Need—

2 to 7½ HP.
FEDERAL VERTICAL SIRENS



FEDERAL Vertical Sirens are built with ample overload capacity.

Federal is proud to fly the Army-Navy "E" flag.

FEDERAL Vertical Sirens are available in capacities ranging from 2 to 7½ HP.—a size to meet every requirement. Each size is designed and constructed for long dependable service—the accomplishment of 40 years of FEDERAL research and engineering.

Signals are powerful and audible over a large area. Sound radiation is equal in all directions. Housings are weather-proof. And, all parts are ruggedly, yet accurately, constructed to give signals when they are needed.

FEDERAL also offers two types of siren controls —the remote control which permits the use of one or more remotely located operating switches —and general alarm controls which include motor driven timers which automatically sound the siren up and down the scale.

FEDERAL Vertical Sirens and controls are dependable. They are standard equipment in many localities.

Permission to purchase on WPB-1319 can be obtained at your nearest WPB office.

WRITE FOR BULLETIN

FEDERAL ELECTRIC CO., INC.
SIREN HEADQUARTERS

8702 So. State Street Chicago 19, Illinois

FIRE ENGINEERING

A Consolidation of Fire and Water Engineering, The Fire Engineer and Fire Protection

CONTENTS

VOL. 97 August, 1944 No. 8

	Page
With the Editor — By Fred Shepperd	519
What Post-War Changes in Fire Apparatus?	520
What Improvements Ahead for the Fire Service? — By Fred Shepperd	523
OCD Fire Fighting Equipment — A Report to the Fire Service on Disposal Thereof — By Roi B. Woolley	525
Chemistry in Fire Fighting — By Gustave E. Bonadio	528
A Picture of Postwar Communications Programs	531
Complex Fire Problems Handled by County-Wide Department — By Bob Greenock	532
Hartford Circus Catastrophe — By Thomas F. Magner	536
New War Product Produces Problem for the Fire Service	539
Responsibility of Fire Chiefs for Safety of Public — By W. J. Scott	541
Ammunition Blast Demolishes Ships and Shore Structures — By Bob Greenock	543
Fire Station Design and Construction	544
Novel Military Dispatch System — By John L. Dougall	547
Presidio Military Center Has Efficient Fire Service — By Bob Greenock	550
Death from the Skies	552
Dominion Fire Chiefs Discuss Post-War Protection Problems	555
Manufacturers' Announcements	556
Questions and Answers	557
With Our Readers	558
The Round Table — Fire Setting by Juveniles	560
Portrait Section	563
Convention Dates	568
False Alarms	569
The Watch Desk — By Roi B. Woolley	570
War Fare — By Roi B. Woolley	603
What's Burning?	607

FRED SHEPPERD
Editor

ROI B. WOOLLEY
Assistant Editor

A Record!

YOU hold in your hand the biggest issue of FIRE ENGINEERING ever published in its sixty-seven years of busy life!

● Naturally, we're pretty proud of this achievement, but nowhere near as pleased about its sheer size as we are about what makes for that magnitude.

● We like to believe that this conference issue is a national fire service conference in itself. Its editorial pages bring you the story of what's happening — and what may be expected to happen—in the fire service. Its advertising pages tell you what's new in the way of apparatus and equipment and who makes it; more than a hundred "printed exhibits" which you can enjoy without crowding or pushing, in your own easy chair, at your leisure.

● The "admission fee" is simply your annual subscription. And there's no "tax" for you to pay. Recognized business and industrial publications are looked upon by Uncle Sam as very necessary to the welfare of our Nation.

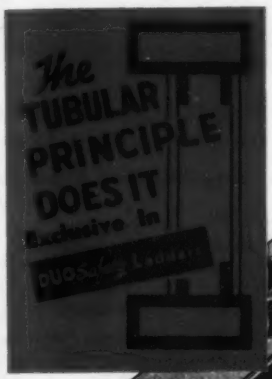
The Publishers

FIRE ENGINEERING

The Journal of the Fire Profession since 187[illegible] published on the fifteenth of each month by Case-Shepperd-Mann Publishing Corp., 24 W. 40th St., New York 18, N. Y., also publishers of *Water Works Engineering, Sewage Works Engineering*, etc. ¶Subscription price U. S. and Latin America, $2.50 a year; Canada, $3; Foreign, $3.50. Single copies, 25c. ¶Member of Audit Bureau of Circulations and Associated Business Papers, Inc. ¶Entered as second-class matter April [illegible], 1929, at the Post Office at New York, N. Y., under Act of March 3, 1879. ¶Contents of this issue copyrighted, 1944, by Case-Shepperd-Mann Publishing Corp. ¶KARL M. MANN, President; I. HERBERT CASE, Vice-President and General Manager; FRED SHEPPERD, Secretary and Editorial Director; W. J. GIBSON, Eastern Representative; WM. H. TOPHAM, Circulation Manager. CHICAGO OFFICE: W. S. CLEVENGER and L. M. ROCHE, 6 No. Michigan Ave., Chicago, Ill.; SAN FRANCISCO: CHARLES H. WOOLLEY, 605 Market Street, San Francisco 5, Calif. LOS ANGELES: AUGUST HAURIN, 6000 Monte Blvd., Los Angeles 1, Calif. ¶Printed in U. S. A.

A CASE-SHEPPERD-MANN PUBLICATION
"Specialized Leadership"

Tubular STRENGTH



• 500A SERIES All-Aluminum •

I hope to see all my Fire Chief friends at the Fire Chiefs I.A.F.C. Conference in Grand Rapids, Aug. 28-31, at the Duo-Safety Booth No. 20. Latest developements in ladder construction will be on display.

E. J. ARPS, President
Duo-Safety Ladder Corp.

NEW DUO-SAFETY ALL ALUMINUM HAS EVERYTHING FIRE CHIEFS DEMAND OF LADDER EQUIPMENT

Duo-Safety's ALL ALUMINUM ladders are back again! Here's that unique, space-saving, over-lapping Series 500A construction.(See cut.) It gives maximum climbing space to the very top rung . . . reduces space required for banking which makes the use of shorter wheelbases on service trucks. It does these things without sacrificing strength or light weight. Duo-Safety's exclusive TUBULAR PRINCIPLE does it! This rectangular extruded Duralumin rail, together with other structural refinements, gives the Fire Chief everything he's looking for, and makes Duo-Safety ALL ALUMINUM a great ladder hit!

Get full description of 1, 2 and 3 section Duo-Safety ALL ALUMINUM Fire Ladders. Write for Form 75A.

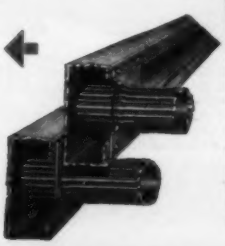
DUO-SAFETY LADDER CORP.
OSHKOSH, WISCONSIN, U. S. A.

NOTE
NOW IN FULL PRODUCTION ON ALL-ALUMINUM FIRE LADDERS
ORDER NOW!

TWO SECTION Series 700 A

SERIES 700A COMPANION EQUIPMENT

This new Duo-Safety channel design is an outstanding development in light-weight pumper ladder equipment. All-aluminum (Duralumin) . . . all around husky construction gives you faultless quality and positive safety! Designed to replace the bulky old type solid side wood pumper ladders.



EXPERIENCE COUNTS

We maintain our own fire school to train firemen on this recognized and exclusive FMC Fog Fire Fighting System.

This school is open to all firemen using FMC Fire Apparatus.

There's nothing else like FMC.

High-pressure fog for fire fighting was originated by the John Bean Mfg. Co. a number of years ago. And — since then — it has developed this system which has revolutionized modern fire fighting technique.

Here's why! The FMC High-Pressure Pump delivers and maintains 800 lbs. pump pressure — more than 600 lbs. nozzle pressure. This high pressure gives you a combination of finely-atomized water and high velocity — just what you need to put out fires faster.

One gallon of this finely-atomized water fog, properly used, has the fire quenching possibilities many times that of low-pressure water.

You get action *fast* with the FMC High-Pressure Fog Fire Fighter. It will handle the usual run of residence, barn, building and basement fires, as well as grass and forest fires. Military units are practically standardizing on Bean where they are now being used with great success for all types of fires.

Investigate! Get the facts about this new and revolutionary fire-fighting technique. Right now — the Armed Forces are taking most of the production of FMC High-Pressure Fog Fire Fighters. But — you should be ready to modernize the moment civilian needs can be met. Start planning — now!

FMC *High-Pressure* PUMP
BUILT ONLY BY BEAN

800 lbs. pump pressure, without strain demands an entirely different design, construction and materials than for low pressure pumping. The Bean pump is a positive displacement pump with low speed for dependability and long life.

ONLY THE FMC HIGH-PRESSURE FOG FIRE FIGHTER PACKS THE NEEDED PUNCH TO PRODUCE AND MAINTAIN 800 LBS. PUMP PRESSURE. BECAUSE IT IS ACTUALLY DESIGNED, BUILT AND PROVEN FOR 800 LBS. PRESSURE AND MORE.

BUILDERS OF BEAN HIGH-PRESSURE

Please mention FIRE ENGINEERING *when writing advertisers*

FMC HIGH-PRESSURE FOG HAS SMOTHERED THOUSANDS OF FIRES

OF ALL KINDS

FIRES OF EVERY TYPE
STORES
BARNS
SILOS
FARM HOUSES
RESIDENCES
BOATS
DOCKS
TRANSFORMERS
CHICKEN HOUSES
FOREST FIRES
GRAIN FIELDS
FACTORIES
LUMBER YARDS
BAKERIES
RESTAURANTS
NIGHT CLUBS
GAS STATIONS
CARS AND TRUCKS
WAREHOUSES
BOWLING ALLEYS
TAR KETTLES
SAWDUST PILES
AIRPLANES
AIRPORT HANGERS
GAS
GASOLINE
GRASS
and many others

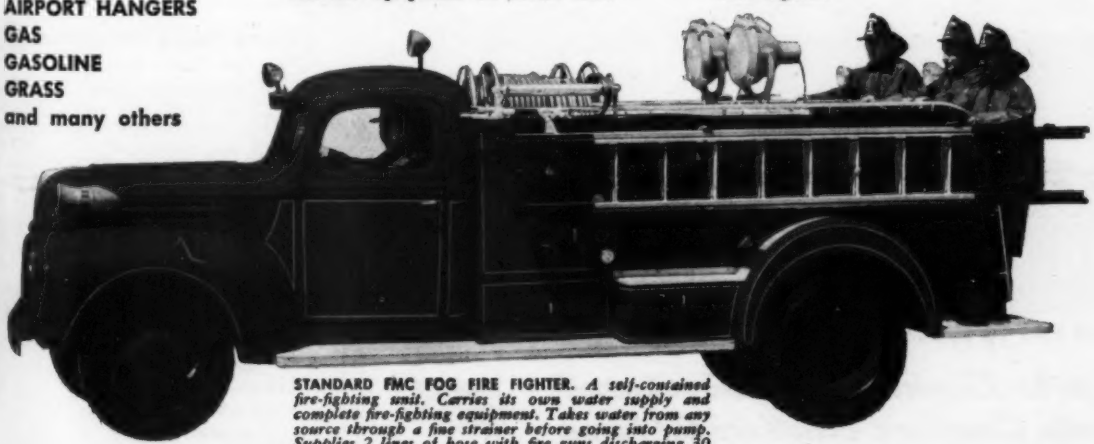
Factory Units Tested On Over 300 Runs

Research goes steadily on — both at the factory and in the field.

Fires have been put out all over the United States for Army and Navy instructional purposes and by the hundreds of rigs in civilian use. Also an organized and trained fire department is located at the factory to test the equipment on actual fires.

Hundreds of runs have been made and fires put out by the John Bean Fire Trucks in and around Lansing.

This necessary experience in high-pressure fire fighting is available to you in the form of a special training course at our factory when you take delivery of your FMC Fog Fire Fighter.



STANDARD FMC FOG FIRE FIGHTER. *A self-contained fire-fighting unit. Carries its own water supply and complete fire-fighting equipment. Takes water from any source through a fine strainer before going into pump. Supplies 2 lines of hose with fire guns discharging 30 gallons per minute per gun at 600 lbs. gun pressure.*

FMC *Original* **HIGH-PRESSURE FOG FIRE FIGHTER**

CAN BE MOUNTED ON MOST STANDARD TRUCK CHASSIS

FOOD MACHINERY CORPORATION

JOHN BEAN MFG. CO., 709 HAZEL ST., LANSING 4, MICH. • BEAN-CUTLER DIVISION, 409 JULIAN ST., SAN JOSE, CALIF.

PUMPS FOR OVER SIXTY YEARS

WATER PUT OUT THIS OIL FIRE ...WATER IN Water FOG FORM!

FROM FIRE TO OUT IN 2 SECONDS!

Plain ordinary water *can* be used to fight dangerous flammable liquid fires successfully. WaterFOG works where a solid stream of water or even spray is ineffective. Why? The answer is basic physics — speed of heat absorption increases with surface area exposed to heat.

By transforming impinging streams of water into minute fog particles, Rockwood WaterFOG nozzles greatly expand the total surface area of a given volume of water. These particles completely envelop the combustion area — quenching the flames, then cooling the oil surface, retarding vaporization. Finally the foglets expand into steam, shutting off oxygen.

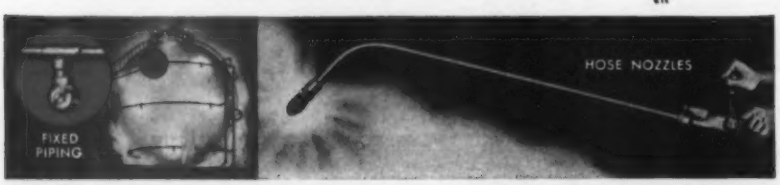
Thus WaterFOG destroys what it takes to make fire: heat, vapor, oxygen. And unlike solid water or spray, WaterFOG floats gently into the combustion area—doesn't plunge into the liquid to accelerate vaporization.

Rockwood installations are approved by Underwriters' Laboratories and Associated Factory Mutuals. Fixed piping installations and hose nozzles. Write for free Bulletin 123, describing how WaterFOG, a non-conductor, absorbs more heat, cools wider area, prevents "flash-back" and lessens water damage.

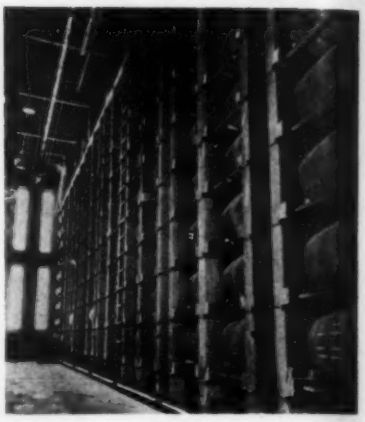
ROCKWOOD SPRINKLER COMPANY
54 Harlow St., Worcester 5, Mass.
Specialists in Fire Protection Engineering, Equipment and Installation since 1907

ROCKWOOD Water FOG

Water Engineered by Rockwood Cools, Confines, Smothers Oil Fires



ROCKWOOD WaterFOG Equipment Protects Bonded Warehouse



At Melchers Distilleries, Ltd., Berthiersville, Quebec, an automatic WaterFOG Deluge System protects the whiskey warehouses from destruction by fire.

WaterFOG system in test operation. Fan-shaped curtain of WaterFOG fills aisle between racks of barrels. WaterFOG can also be discharged from heads under racks.

Fixed Piping Installations for Many Hazards

Wherever flammable liquids are stored, processed or transferred, a Rockwood-engineered installation of fixed piping, heads, valves and automatic control devices will provide maximum protection from fire. In planning such systems, Rockwood engineers (authorities on hydraulics, as applied to fire protection) make individual recommendations for spacing of heads, fog pattern, distance of heads from hazards, etc.

Typical installations are:

WaterFOG Protection for
- quench and dip tanks
- paint shops
- control rooms
- oil switches
- dryers
- oil storage

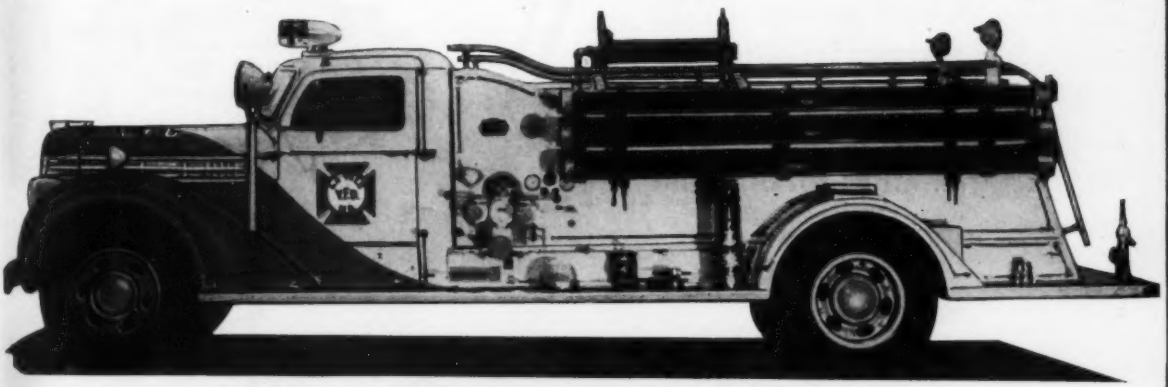
etc.

Write for Bulletin 123, giving more complete information on WaterFOG equipment. EXECUTIVES! A colored movie (16mm.) showing tests of Rockwood WaterFOG, is available.

FIRE APPARATUS — *CUSTOM-BUILT*

By

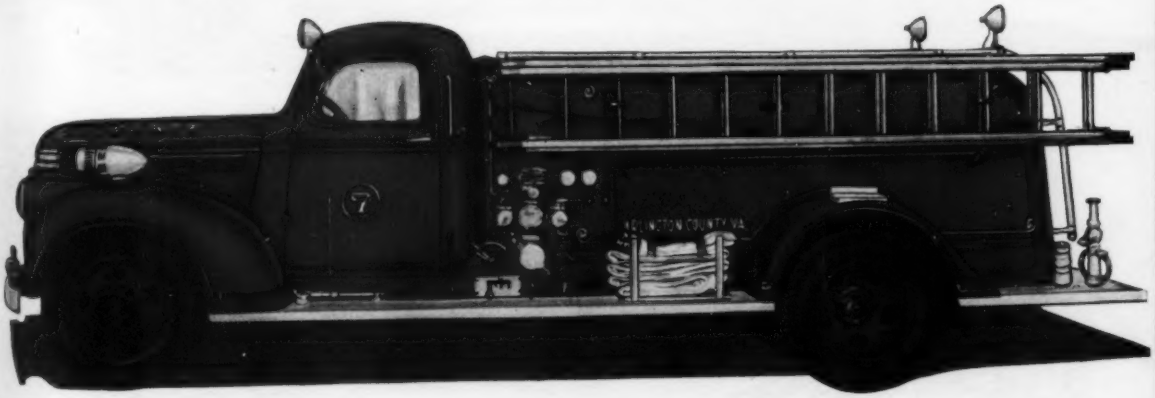
OREN



La Vale Volunteer Fire Dept., La Vale, Maryland

EVERY OREN *IS SPECIALLY BUILT AND DESIGNED*

TO MEET THE INDIVIDUAL NEEDS OF YOUR COMMUNITY



Arlington County Fire Dept., Arlington, Virginia

OREN FIRE APPARATUS COMPANY

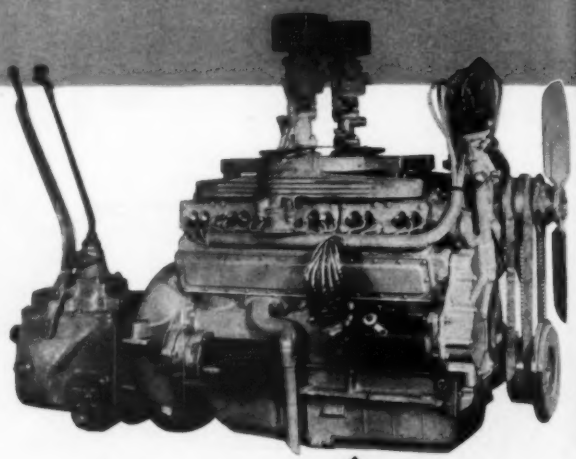
The South's Only Fire Truck Manufacturer!

Roanoke, Virginia

AMERICAN-LAFRANCE*

FIRE

for DURABILIT..



The smooth and powerful V-12 motor has proven its outstanding value in 14 years of fire service. Built by AMERICAN-LAFRANCE is your guarantee of lifetime service.

The CENTRAFLOW pump, built by AMERICAN-LAFRANCE exclusively for fire service. Bronze pump housings are now furnished to provide all the pre-war features for long life.

* LAFRANCE-FOAMITE in Canada

AMERICAN-LAFRANCE-FOAMITE CORPORATION

ELMIRA, NEW YORK, U. S. A.

LAFRANCE FIRE ENGINE AND FOAMITE LIMITED

TORONTO, 9, ONTARIO, CANADA

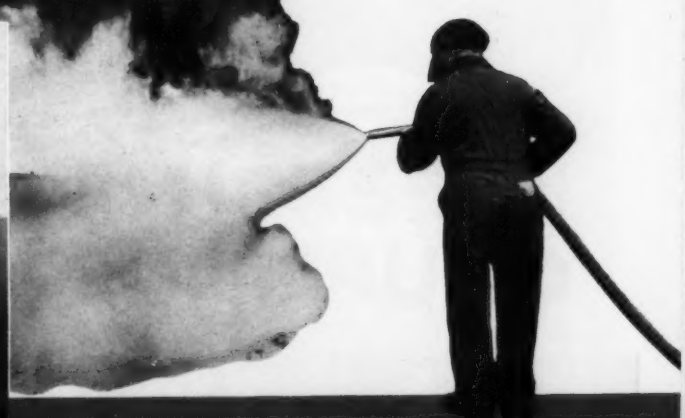
ENGINES

IT . . PERFORMANCE . . . UTILITY

Spray and Fog Nozzles

USE THEM WITH YOUR PRESENT PUMPING ENGINES!

Plan to attend the I.A.F.C. conference in Grand Rapids, Mich. for the report on the three day tests of spray and fog nozzles by the I.A.F.C and the National Board of Fire Underwriters Full color motion pictures of these important tests. The dates: August 28-31 inclusive.



AMERICAN LA FRANCE FOAMITE

There's the world's finest coupling. I'll tell you why: "It's thoroughly modern in design; it won't catch or drag; won't wear holes in hose when stacked; it's made to stand up; it's the coming hose coupling.

We're specifying them on all new hose"!

KLEERLINE COUPLINGS

★

Full information through your local dealer

★

FASTER
STREAMLINED
BETTER
MODERN DESIGN

ANDERSON FIRE-FIGHTING
EQUIPMENT COMPANY, INC.
407 WEST 36th STREET NEW YORK 18, N. Y.

Fire News of Top Importance!

FCC and WPB okay 3-way Radio for Fire Stations

Federal Communications Com... en banc today approved ... to the Rules Govern... Radio Servic...

Motorola installs 3-Way Citywide F-M Radio System in Boston, Massachusetts

Now You Can Bring Your Fire Fighting Equipment Up-to-Date

Think what it means to have instant communication with your firemen and equipment at all times—in fire stations, "on the way", and fighting the fire at the scene. What such communication means in conserving lives, property, personnel and equipment!

All these advantages you get with a Motorola Fire Fighters' radiotelephone system like Boston installed. The system is modelled after the famous Motorola police radiotelephone system so successfully used by State Police, County Sheriffs and City Police in many States, hundreds of Counties, Cities and Villages throughout the United States and the Canal Zone.

Full Information

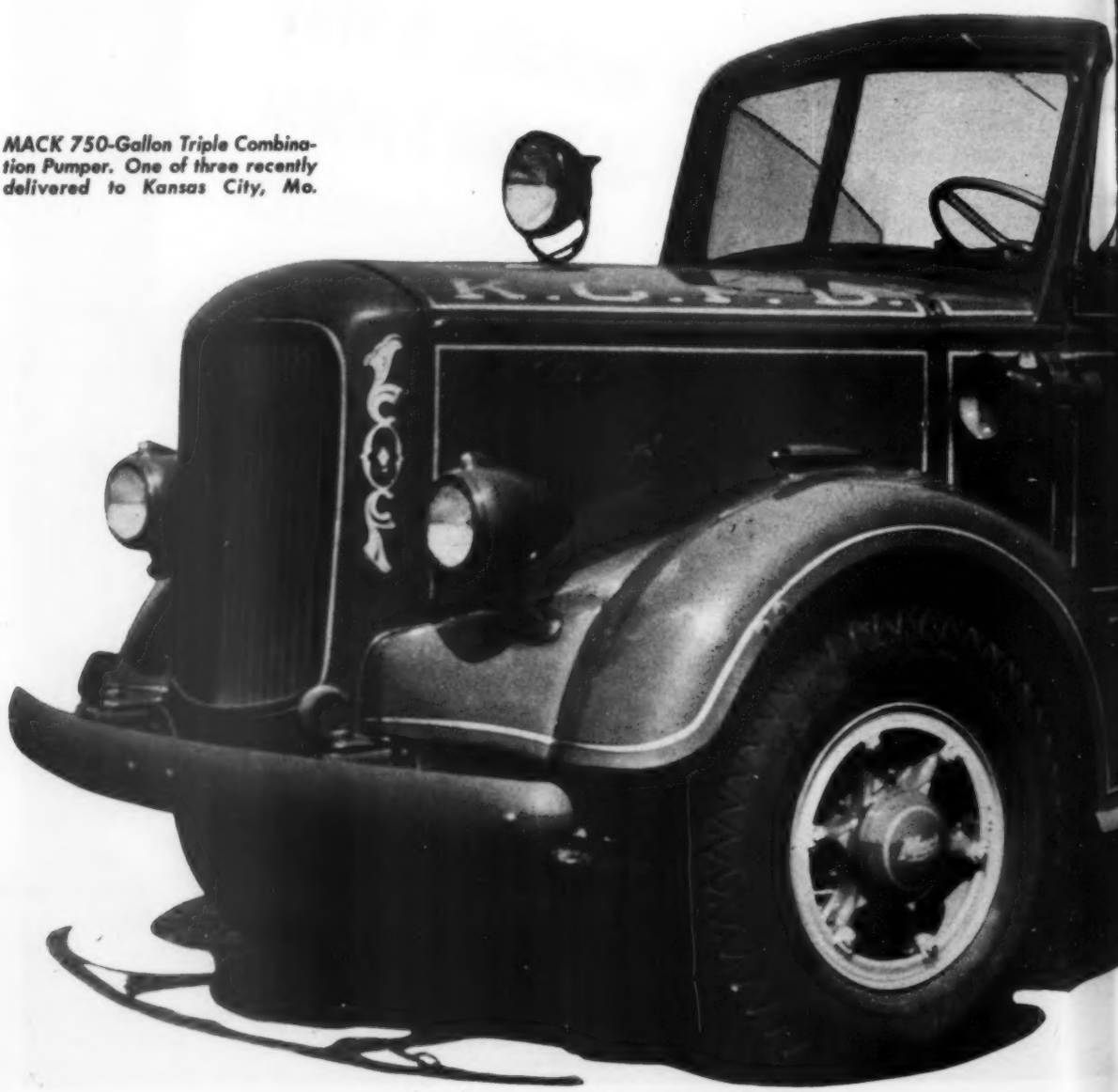
All you want to know—the radiotelephone system best for your community, all about the forms and applications—you can obtain quickly and without obligation. Just write today to the Motorola Division, Galvin Manufacturing Corporation, Chicago 51, Illinois.

● **Motorola who developed the "Handie Talkie" will make them available for Emergency Fire and Police use as soon as obligations to our armed forces have been completely fulfilled.**

GALVIN MFG. CORPORATION · CHICAGO 51

F M RADIO · AUTOMATIC PHONOGRAPHS · TELEVISION · F M POLICE RADIO · RADAR · MILITARY RADIO COMMUNICATIONS

Greetings



MACK 750-Gallon Triple Combination Pumper. One of three recently delivered to Kansas City, Mo.

FROM MACK . . .

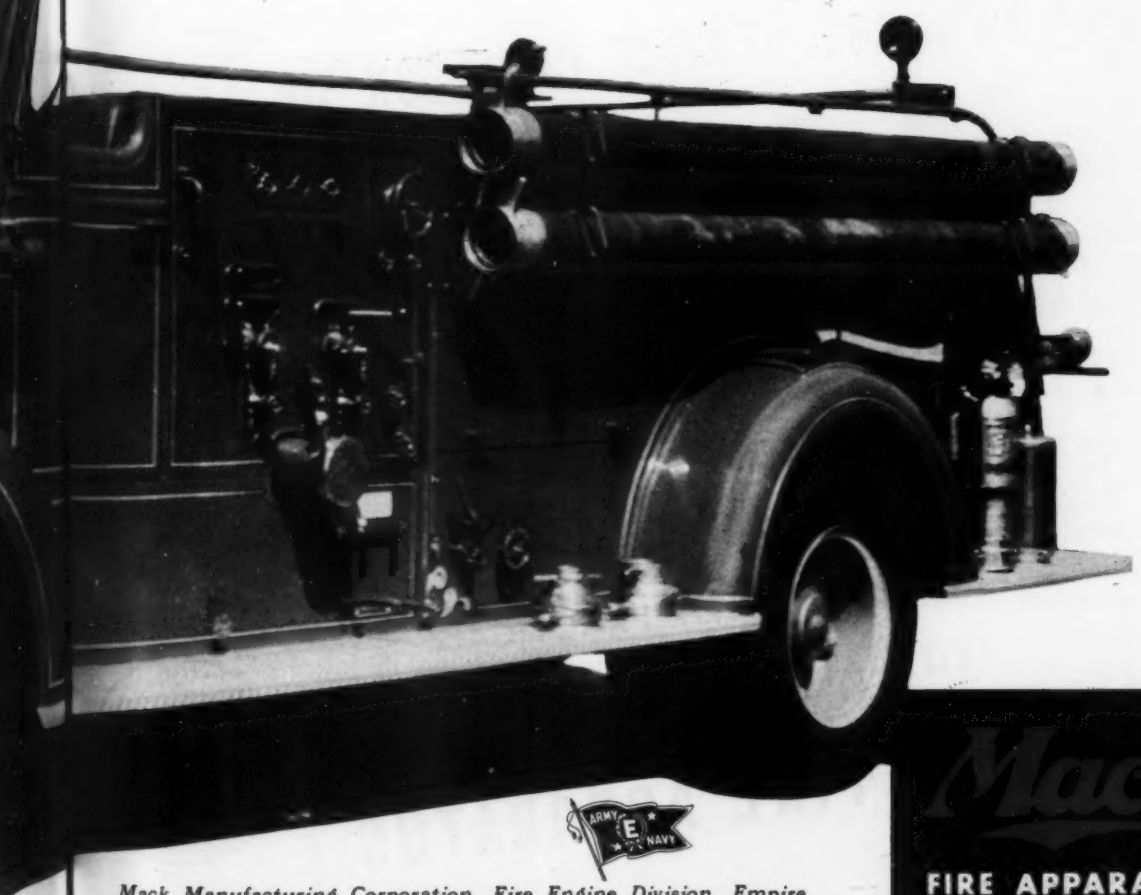
To the International Association of Fire Chiefs at their 71st Annual Conference

You fire chiefs know what it's like to be on the spot . . . with a hot one flaring and the safety of your community in your men's hands. You know how important it is to have dependable equipment with you . . . on the spot!

For 33 years Mack has built dependable fire fighting equipment—built it with your needs in mind. In war and peace, Mack's vast resources permit constant improvement . . . and Mack exercises unusual control over the quality and workmanship of vital parts.

Mack builds in its own factories such vital parts as engines . . . clutches . . . transmissions . . . rear axles . . . front axles . . . brakes . . . steering gears . . . frames . . . pump parts . . . radiators . . . sheet metal parts . . . cabs . . . seats . . . and bodies.

No wonder Mack is first choice of so many communities . . . no wonder that so many of your fellow fire chiefs will tell you "You can't beat Mack!"



Mack

FIRE APPARATUS

Mack Manufacturing Corporation, Fire Engine Division, Empire State Building, New York 1, N. Y. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts.

YOU'VE GOT A MACK, YOU'RE LUCKY . . . IF YOU PLAN TO GET ONE, YOU'RE WISE!

THE FIRE SERVICE CAN LOOK TO

MAXIM

FOR UP-TO-DATE APPARATUS
ENGINEERING THAT WILL
EMBODY EVERY NEW IDEA
THAT CAN CONSERVATIVELY
COMBINE WITH PRACTICAL,
TRIED AND PROVEN IDEAS.

MOTOR FIRE APPARATUS

MAXIM MOTOR COMPANY
MAXIM
MIDDLEBORO, MASS.

MAXIM MOTOR COMPANY MIDDLEBORO, MASS.

We shall appreciate your mentioning FIRE ENGINEERING *when writing advertisers*

WHEREVER YOU FIND LIFE SAVING AT ITS BEST

Photo courtesy Philadelphia Fire Dept.

EVERY fire chief knows that in judging the value of resuscitation equipment or any other appliances, an ounce of performance is worth a ton of sales talk.

That's why we say, ask any user what he thinks of the E & J Resuscitator and you'll quickly understand why it is so widely used and enthusiastically preferred—by progressive Fire Departments, Hospitals and Large Industries the country over.

When you buy an E & J, you get time-tested, proven dependability which, in life saving, is the all-important element.

★ *For further information write any of our distributors listed below.* ★

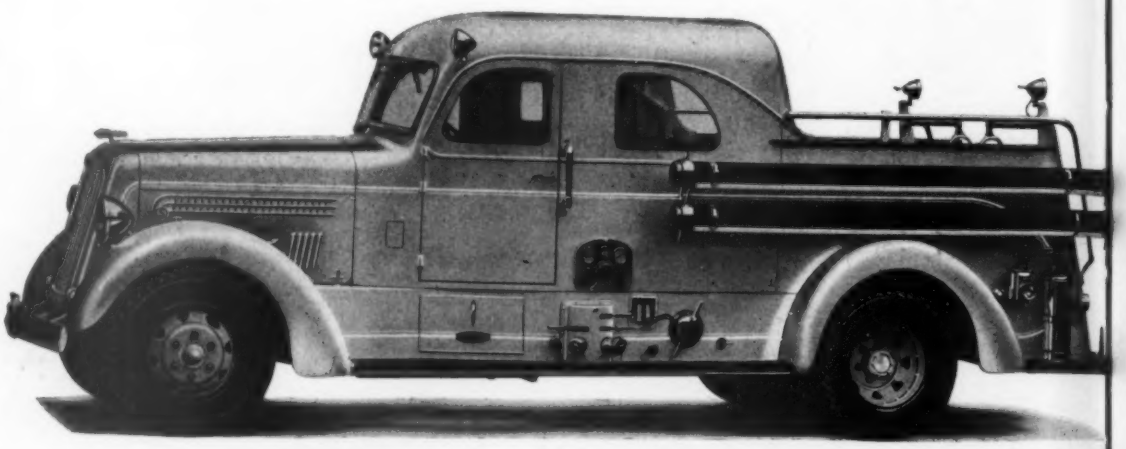
E & J MANUFACTURING CO., GLENDALE, CALIF.

Drexel Bldg. Philadelphia — 17 East 42nd St. New York City — 530 Fernando St. Pittsburgh — 3909 Grandy Ave. Detroit, Mich. — 591 Boylston St. Boston — 2149 No. Springfield Ave. Chicago

Pioneers and Specialists in Mechanical Artificial Respiration

★ SEAGRAVE BUILT MOTORS ★ SEAGRAVE BUILT

★ SEAGRAVE MECHANICAL PERFECTION ★ SEAGRAVE



Seagrave

THE GREATEST NAME

Seagrave has always been the leader in progressive developments in Fire Apparatus construction . . . Seagrave Engineers are always seeking for a better way. It is this pioneering spirit that has made Seagrave "The Greatest Name in Fire Apparatus".

★

THE SEAGRAVE CORPORATION
Columbus, Ohio
Bickle-Seagrave Ltd.,
Woodstock, Ont.

ENGINEERING ★ SEAGRAVE BUILT ALL

ENTRIFUGAL PUMPS ★ SEAGRAVE

BUILT SAFETY STEEL AERIAL LADDERS ★ STEEL CANOPY CABS

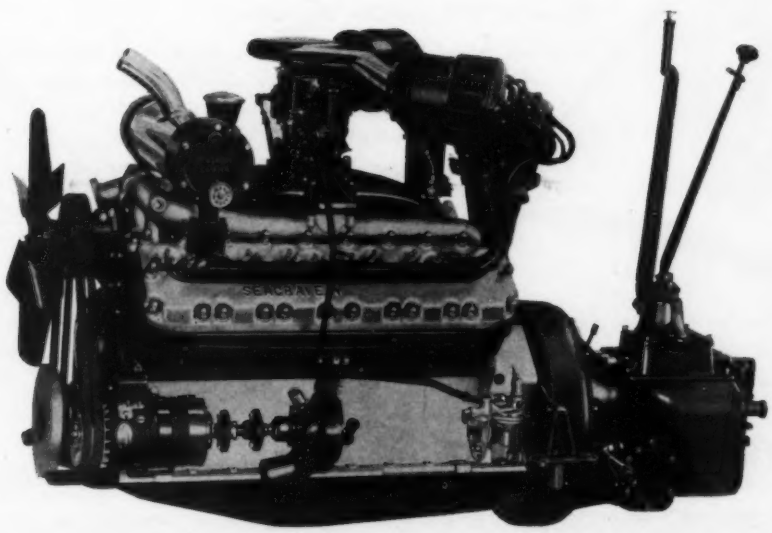
★

The exceptional dependability of Seagrave engineering and Seagrave construction has been proven over a period of sixty-three years . . . Yes, sixty-three years have demonstrated that when the going is toughest, Seagrave Apparatus is at its best.

★

Seagrave

IN FIRE APPARATUS



EEL BODIES ★ SEAGRAVE BUILT ALL

HONORED AGAIN!

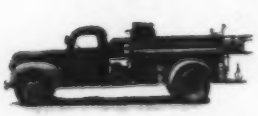
for Excellency in War Production

For the Second Time—

with our government's symbol of work well done, the men and women of Young Fire Equipment Corp. are doubly proud of this symbol of honor.

To our friends in the fire service these stars can have particular significance. They signify all-out effort on the job at hand. Later, when victory is ours, this all-out effort can be directed to the type of job you want for your department.

★
★



YOUNG FIRE EQUIPMENT CORPORATION

FORMERLY CAYASLER MFG. CORP.

1546 WILLIAM STREET - - - BUFFALO 6, N. Y.

Please mention FIRE ENGINEERING *when writing advertisers*

126 Years of "Know How" Back of AKRON BRASS

16 YEARS EXPERIENCE

H. LOUIS STETTLER, JR.

Executive Vice President and General Manager

Has served this company as Director, Factory Manager, Treasurer, Assistant General Manager, General Sales Manager and at present, General Manager. He gives Akron Brass the benefit of 16 years in a professional capacity as accountant, financial advisor and managerial experience.

HENRY M. HUNT

Chief Engineer

With Akron Brass for 25 years, Mr. Hunt has a total of 47 years experience. Served his apprenticeship as machinist, and tool maker. Rapidly rose to tool room foreman and machine shop superintendent with various companies before joining Akron Brass in 1919.

47 YEARS EXPERIENCE

19 YEARS EXPERIENCE

D. P. GLESSNER

Plant Superintendent

As Plant Superintendent at Akron Brass, Mr. Glessner gives our customers the benefit of his 19 years devoted to construction work, factory experimental laboratory tasks and as machine shop foreman. Your problems get efficient attention from Don.

A. J. RATZEL

Assistant Secretary and Purchasing Agent

Started his business career with Akron Brass 22 years ago. Has served in every department of the company in both factory and office. At present, Assistant Secretary and Purchasing Agent. Also handles your orders which come to us by mail or telephone.

22 YEARS EXPERIENCE

ROY W. SWARTZ

Production Manager

With thorough experience in machine shop, foundry and office at Akron Brass, Mr. Swartz is well qualified to maintain production and meet delivery schedules.

22 YEARS EXPERIENCE

The "know how" of these men serves you well at Akron Brass. And they are backed by a trained, efficient organization . . . and plant capacity . . . to give you the best in fire-fighting equipment.

AKRON BRASS MFG. COMPANY, INC.
WOOSTER, OHIO

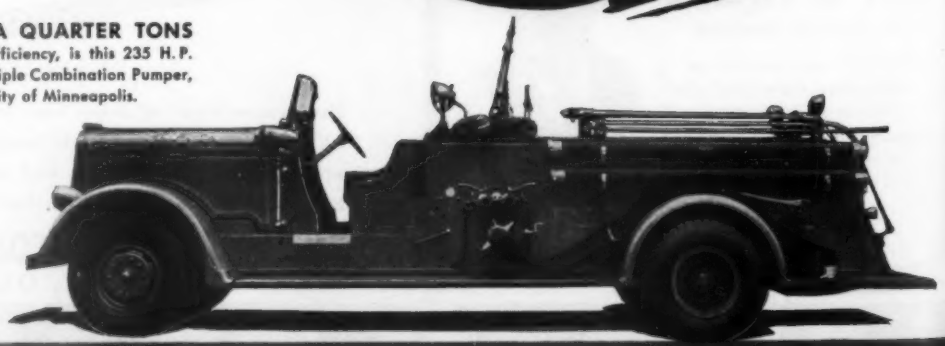
AKRON BRASS
FIRE FIGHTING EQUIPMENT

WARD LA

FOR POWER • DURABILITY

TRIPLE COMBINATION PUMPER,
200 H.P., 1000 G.P.M., with 200 gal. Booster Tank, recently delivered to Duluth, Minnesota.

NINE AND A QUARTER TONS
of fire-fighting efficiency, is this 235 H. P. Ward LaFrance Triple Combination Pumper, delivered to the City of Minneapolis.



GAI

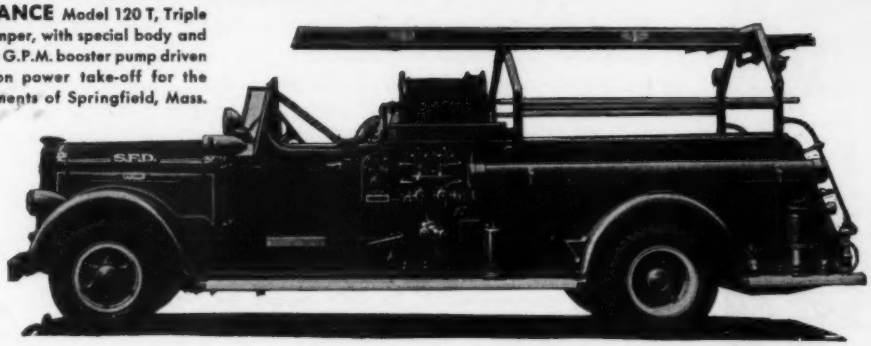
WARD LAFRANCE TRUCK DIVISION

GREAT AMERICAN INDUSTRIES, INC.

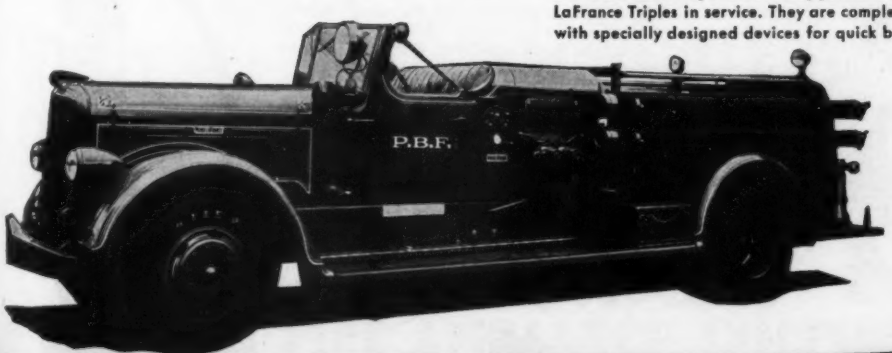
FRANCE...

EFFICIENCY • STABILITY

WARD LaFRANCE Model 120 T, Triple Combination Pumper, with special body and independent 100 G.P.M. booster pump driven from transmission power take-off for the special requirements of Springfield, Mass.



PITTSBURGH, PA. recently put two of these 1000 G.P.M. Ward LaFrance Triples in service. They are completely air-brake equipped, with specially designed devices for quick build-up of air pressures.



VISIT US AT GRAND RAPIDS, Booth 27

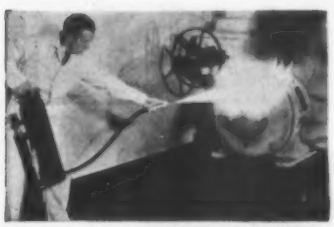
ELMIRA, NEW YORK

This 10x10' pit of flaming oil and gasoline was extinguished in 6 seconds by the "ALL-OUT" Fire Extinguisher.

to extinguish FIRE on the INDUSTRIAL FRONT

The workman who attacks fire with the new "ALL-OUT" Dry Chemical Extinguisher is *fully armed* to extinguish quickly both flammable liquids and fires in electrical equipment . . . *fully protected* against radiant heat and electrical shock.

The "ALL-OUT" Extinguisher discharges a stream of "ALL-OUT" Dry Chemical that instantly generates a dense, fire-smothering, heat-resisting cloud over a flaming area up to a distance of 18 feet. This chemical cloud—clean and harmless to the operator—will not scratch, stain, nor mar either highly polished surfaces or the moving parts of motors and machinery.



A non-conductor of electricity, "ALL-OUT" Dry Chemical is especially effective and safe on fires in heavy electrical equipment — motors, generators, condensers, cable ducts, etc.

The "ALL-OUT" Extinguisher extinguishes stubborn, hazardous running gasoline fires in a matter of seconds. Two seconds after this picture was exposed, this running gasoline fire was completely out.

Even though fire may strike in almost inaccessible places, "ALL-OUT" is sufficiently light to carry and operate by men or women workers under the most difficult circumstances.

IMPORTANT "ALL-OUT" FEATURES

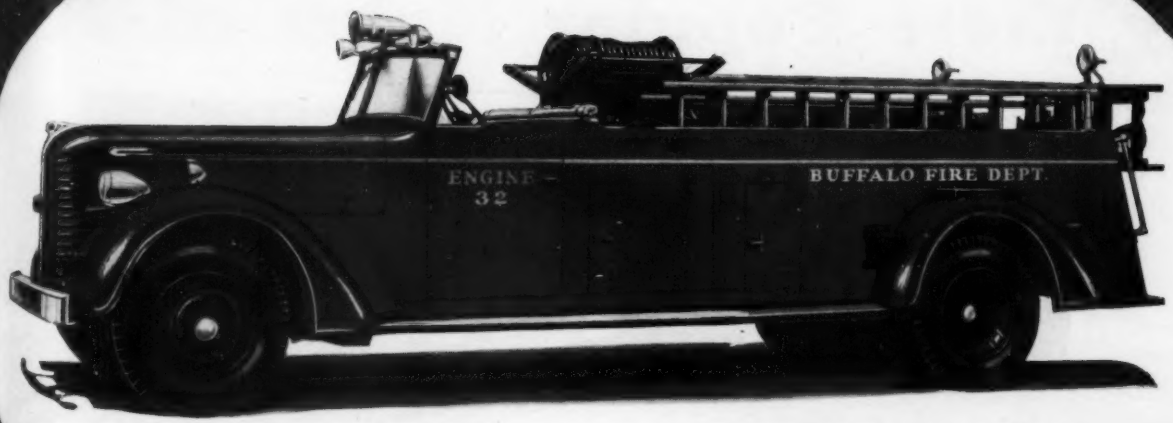
Weighing approximately 37 lbs. fully charged, the "ALL-OUT" Extinguisher is ruggedly constructed and *easy to carry and operate* by men or women employees . . . larger opening into powder container, and exterior mounting of the 5½ oz. carbon dioxide cylinder permits *quick, on-the-spot recharging* without special equipment at the scene of fire . . . method of introducing carbon dioxide pressure into chemical chamber produces *heavier* and *denser cloud* of fire-killing "ALL-OUT" Dry Chemical . . . special formula of "ALL-OUT" Dry Chemical creates an insulating film on hot metal surfaces and *helps guard against re-flash* . . . fan-shaped nozzle causes chemical to be projected in a flat stream that *separates the flame* from the burning material . . . Squeeze-Grip nozzle gives *instantaneous* and *positive control.*

See The "ALL-OUT" Extinguisher Demonstrated. Write Today For Your Copy Of This New, Illustrated Folder, And The Name Of Your Local "ALL-OUT" Representative.

The approval identification mark of the Associated Factory Mutual Laboratories appears on the label of each extinguisher.

"ALL-OUT" *"Fatal to Flame"*

NATIONAL POWDER EXTINGUISHER
CORPORATION
50 ROCKEFELLER PLAZA, NEW YORK 20, NEW YORK



Another Buffalo 1,000 G.P.M. Triple Combination for the city of Buffalo, the sixth repeat order.

SAFE

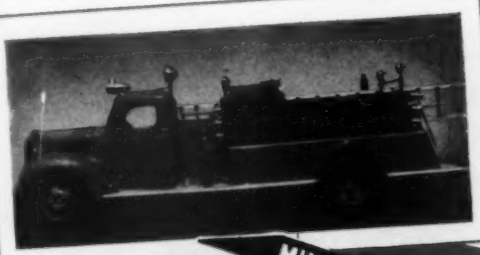
CLEAN STREAMLINED BODIES

BUFFALO FIRE APPLIANCE CORPORATION

BUFFALO . . . . NEW YORK

NATION-WIDE O.K. o

By these Popular Makes of FIR

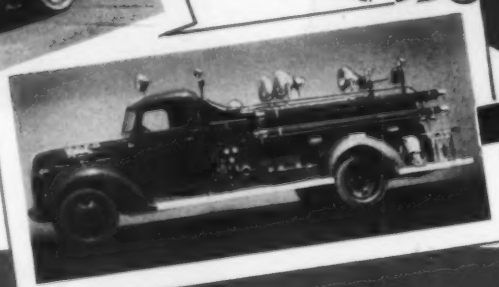


GRAY FIRE APPARATUS CO.
LEWISTON, ID HO

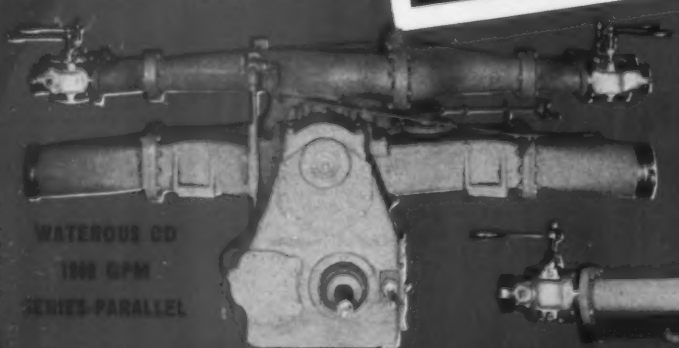
MINNESOTA FIRE EQUIPME
LINDSTROM, MINNESOTA

F. A. B. MFG. CO.
OAKLAND, CAL.

GENERAL PACIFIC CORP.
LOS ANGELES, CAL.



MC ALLISTER CO.
DALLAS, TEXAS



WATEROUS CD
1000 GPM
SERIES-PARALLEL

MR. FIRE CHIEF: The fire apparatus you use play... important part in the record of your department... you, manufacturers of fire apparatus stake their ... tation upon the pump they buy. The well-known c... panies listed here use WATEROUS Fire Pumps ... standard equipment. For dependability and long ... specify WATEROUS on your next piece of pump... equipment

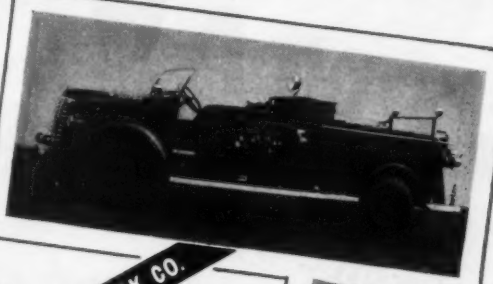
The size and type of the WATEROUS Pump selected for the fire apparatus illustrated is engineered into each chassis with exacting care, with resultant convenience of operation and maximum performance. Fifty-eight years of manufacturing and steady improvement are behind every WATEROUS Pump—sizes 100 GPM to 1250 GPM

WATEROUS CA-1
500 GPM
SINGLE STAGE

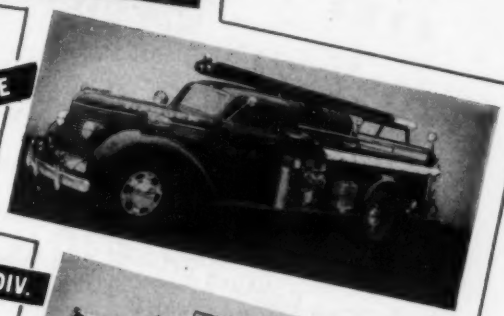
WATEROUS COMPANY, ST. PAUL

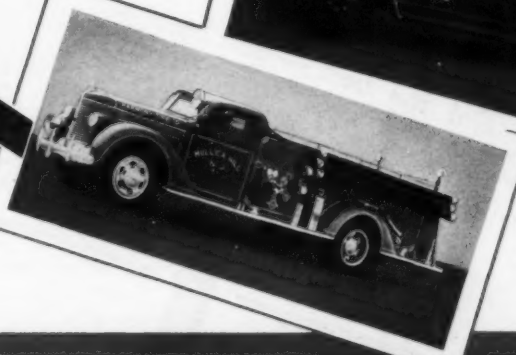
WATEROUS PUMPS

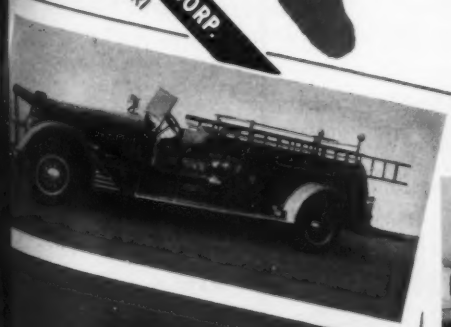
APPARATUS



See the **WATEROUS EXHIBIT** *at the* **CONVENTION**







WATEROUS

CENTRIFUGAL-ROTARY

FIRE PUMPS

...ptive matter is available from ... of the fire apparatus manufac... turers listed here.

Waterous Dependable

SINCE 1866

...INNESOTA

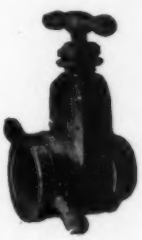
EASTMAN

FIRE FIGHTING PRODUCTS

120 Years Service in the Fire Field

WHEN you specify and get an Eastman product, you are getting the very best the field offers. Years of experience in building fire fighting products is your assurance that you are getting a product that has been built of practical experience in the field, plus all the engineering skill that a background of 120 years' service gives us.

Get the best — get Eastman when you buy!



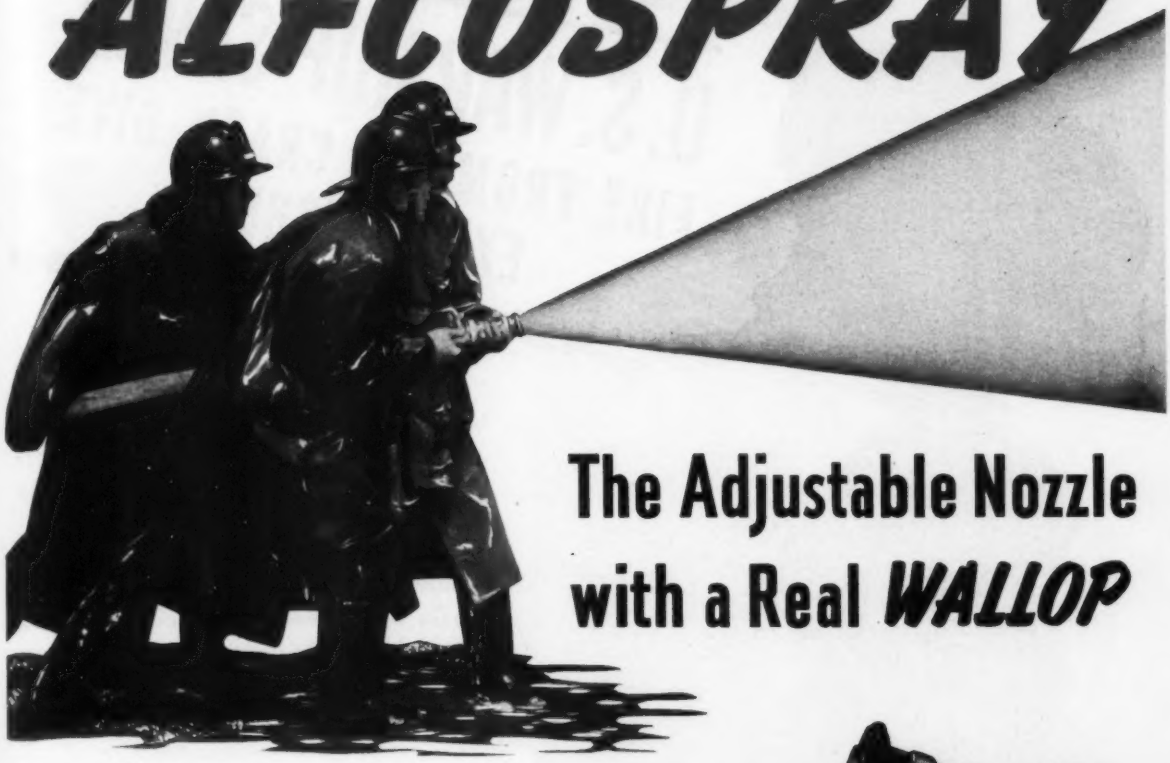
Two-way Gun furnished with or without gate.

While we are now busy with Government work, we welcome your inquiries and will be glad to make shipment of any product on proper priority.

SAMUEL EASTMAN COMPANY, INC.

CONCORD, N. H.

ALFCOSPRAY



The Adjustable Nozzle with a Real *WALLOP*

SPEED PLUS *PROTECTION*

Rapid fire extinguishment is essential. With Alfcospray in operation fire quickly dies down making it easier to approach and finish the job.

The Alfcospray may be operated from straight stream to full curtain. In a straight stream it is as effective as a standard straight bore nozzle of equal capacity. In full curtain it offers protection from heat and flame. It knocks down heavy smoke, dissipates fumes. Now is the time to buy, *before* the fire occurs.

WRITE FOR FREE ILLUSTRATED LITERATURE

AMERICAN-LA FRANCE-FOAMITE CORPORATION
ELMIRA, N. Y.

STREAM
SPRAY
CURTAIN
There is an Alfcospray Model C Nozzle available for all sizes of hose from ¾" to 2½", to suit your requirements.
A TWIST OF THE WRIST GIVES POSITIVE INSTANT ADJUSTMENT

U.S. WARSHIP SAVED
FIRE FROM JAP CRASH DIVE EXTINGUISHED
A Japan[illegible] pilot [illegible] down by U.S. Warship

Hit by the U. S. Warship, the Jap pilot crashed his plane into the superstructure of the ship at the Biak Island landing. On the bow the crew is preparing to fight the resulting fire. Part of the Jap plane is shown burning (at the right).

Quick work by the ship's fire fighting crew, with their adequate equipment, extinguished the fire and saved the warship to continue battling for world freedom.

National Foams and Fire Fighting Equipment have been adopted and are being used extensively by the U. S. Navy to extinguish hazardous fires both on sea and land.

For many years, most oil refineries and large industrial plants have benefited by National Foam Fire Protection Service.

The entire production of Aer-O-Foam Equipment at the present time goes to the armed service—later it will be available for civilian use.

IN FIRE DEPARTMENT SERVICE

National Foam System has equipment especially designed for the use of Fire Departments to meet all types of fire fighting requirements. Complete engineering service available.

BACK THE ATTACK **BUY WAR BONDS**

NATIONAL FOAM SYSTEM, INC.

Specializing in Foam Fire Protection

Packard Building, Philadelphia 2, Pa.

ELEVATED FIRE STREAMS ARE— A "NATURAL" FOR PIRSCH AERIALS

American aerial ladders were made of wood until the first Pirsch aluminum alloy aerial ladder was produced about ten years ago.

Pirsch aluminum alloy aerial ladders have the margin of reserve strength when carrying elevated fire streams and saving lives and property which only riveted fabrication can provide.

Do not be misled by extravagant claims of superiority of welded over riveted construction as the records of many years of outstanding performance of riveted structures in the form of ships, bridges, derricks, booms, bomber wings, etc., as compared to welded construction prove otherwise in no uncertain terms.

Buy the original All-Metal aerial ladder—Buy PIRSCH.

PETER PIRSCH & SONS CO. KENOSHA, WIS.

"BUILDERS OF AMERICA'S FIRST ALL-POWERED AERIAL LADDER TRUCK AND AMERICA'S FIRST 100' AERIAL LADDER"

M·S·A SAFETY EQUIPMENT

SERVING THE FIREMEN WITH DEPENDABLE PROTECTION ON THE JOB!

Be sure to *See the* M·S·A EXHIBIT at Grand Rapids

M·S·A *Streamline* FIREMAN'S HELMET

Modern, trim in appearance, well-balanced, light in weight—with the time-proved head protection of strong laminated bakelite! These features are summed up in this popular M.S.A. Helmet, widely used by progressive Departments throughout the country. The one-piece molded, streamlined helmet features a long rear brim designed to keep water, sparks, and embers away from the neck, and a reinforcing ridge on the crown that aids in deflecting falling objects and adds to the appearance of the helmet. Shock-absorbing inner hammock and soft leather sweatband assure easy-wearing comfort. Complete details in Bulletin No. DX-5.

M·S·A *All-Service* GAS MASK

WITH THE MODEL S CANNISTER

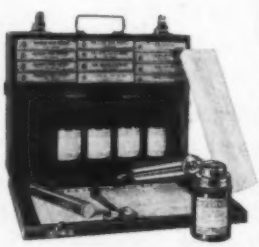
(*Bureau of Mines Approved*)

Protection against all poisonous industrial gases, toxic, smokes, and fumes—singly or in combinations (including carbon monoxide)—is provided for the fireman by this Mask, wherever sufficient oxygen is present to support life. New Model S canister has large-area filtering element for toxic smokes, and fumes. All-vision facepiece assures unobstructed vision and comfortable fit. Bulletin No. EA-8.

THE H·H INHALATOR

The premier instrument for resuscitation of victims of smoke, gas, electric shock, and drowning—used in conjunction with artificial respiration. Famous for many years in fire department service, the H-H Inhalator safely, gently, and naturally supplies oxygen-carbon dioxide mixture according to demand of the patient's lungs. Operation is simple, effective, readily understood and applied. Ask for Bulletin No. CA-9.

M·S·A FOILLE BURN SPRAY KIT



Prompt and effective emergency treatment of burns is made possible by this specialized kit. Efficient metal spray gun applies "Foille for Burns" quickly over the affected area, relieving pain and shock, hastening healing. Ample supplies of Foille in jars connecting to spray gun; first aid dressings and accessories are included. Request Bulletin FA-73.

FIRE DEPT. FIRST AID KITS

Specialized fire department kits are available in 24 and 36 unit sizes, containing unit-packaged assortments of necessary materials, each package including one or more complete treatments for injuries that can be applied without waste. Easy to use and maintain, these kits are sturdily constructed, dustproof, and weatherproof. Ask for the details on the complete M.S.A. line.

MINE SAFETY APPLIANCES COMPANY

BRADDOCK, THOMAS AND MEADE STREETS • PITTSBURGH, PA.

District Representatives in Principal Cities

IN CANADA

MINE SAFETY APPLIANCES COMPANY OF CANADA, LIMITED

TORONTO . . . MONTREAL . . . CALGARY . . . NEW GLASGOW, N. S.

First reader in fire protection

Free book tells how to keep extinguishers in fighting form

Make sure *your* fire-fighters will always be ready to nip blazes before they get out of hand. Regular inspection is the only safe way.

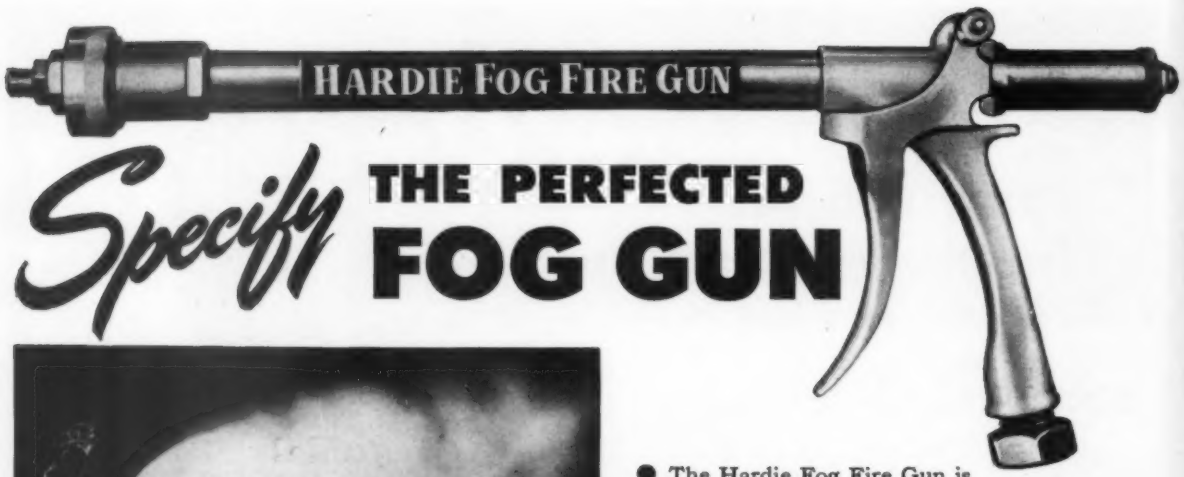
This new book, issued by Walter Kidde & Company, will help you set up your own maintenance system. It covers all types of equipment, gives exact instructions for examining and re-charging. Write for your free copy today! Just ask for "Inspection and Maintenance of First Aid Fire Extinguishers."

CHAPTER HEADINGS INCLUDE:

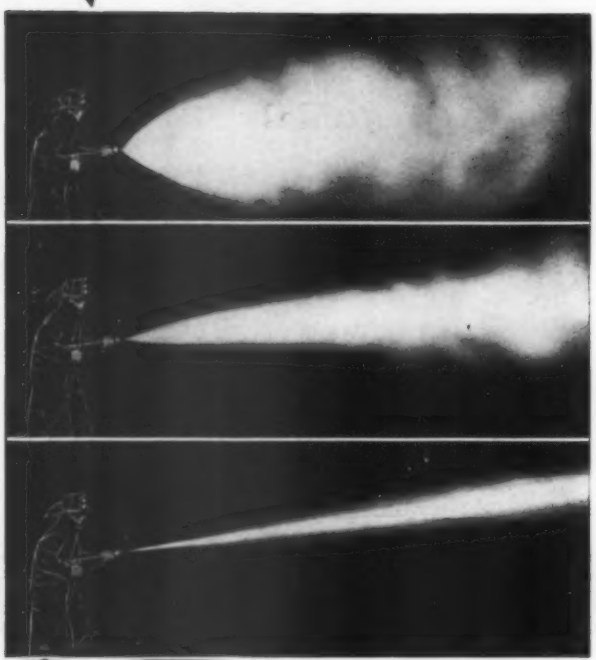
- WHO'S IN CHARGE?
- KEEPING RECORDS
- MARKING THE EXTINGUISHERS
- INSPECTION OF EXTINGUISHERS
- VAPORIZING LIQUID EXTINGUISHERS
- CARBON DIOXIDE EXTINGUISHERS
- SODA-ACID EXTINGUISHERS
- FOAM EXTINGUISHERS

WALTER KIDDE & COMPANY, INC., 140 CEDAR STREET, NEW YORK 6, N. Y.

Kindly mention FIRE ENGINEERING *when writing advertisers*



Specify THE PERFECTED FOG GUN

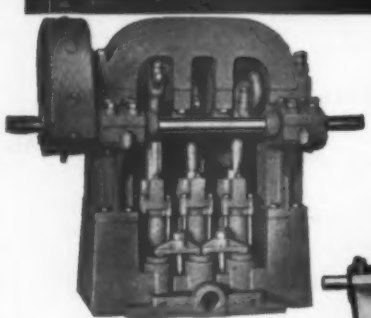


● The Hardie Fog Fire Gun is designed and built especially for the Fog Fire Fighter. It is not merely an adaptation of a nozzle or gun originally designed for other purposes. It produces a true fog—there is no splatter. The water is completely atomized.

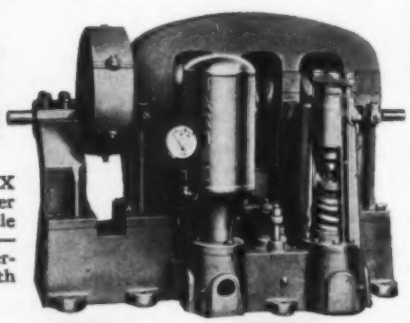
Hardie Single Trigger Control opens and closes the gun and selects any type of spray desired. One hand does it all by a slight pressure of the fingers. The atomizing device is simple non-clogging machined brass casting. The gun weighs about 4 pounds. Perfect balance makes it feather-light when the pressure is on.

The Hardie Fog Gun permits a wide range of stream selection from a fine steam-like fog to a solid penetrating stream. Intermediate spray, combining fog with a fine driving stream, is obtained by merely changing the position at which the fingers hold the trigger. Thus fog and stream can be used at the same time or quickly and easily alternated as desired. The gun is strongly built of all brass construction except trigger which is made of aluminum. Trouble free operation and long life are assured by simplicity of design and sturdy construction. Easily handles pressures of 500 to 1000 P. S. I. Made only by

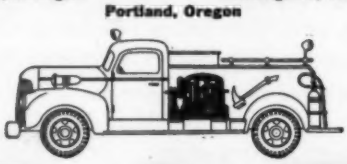
THE HARDIE MFG. COMPANY
Hudson, Michigan Los Angeles, California
Portland, Oregon



● Leading manufacturers of Fog Fire Fighters equip their units with Hardie High Pressure Pumps because exclusive Hardie features of pump design and construction bring specific valuable advantages.



● Above—The Hardie XCXX Pump delivering 35 gallons per minute at 118 R. P. M. with nozzle pressure of 500 P. S. I. At right—The Hardie LCXA Pump delivering 60 gallons at 130 R. P. M. with nozzle pressure of 800 P. S. I.



★H★A★R★D★I★E

High Pressure **PUMPS AND FOG GUNS**

for Fog Fire Fighters

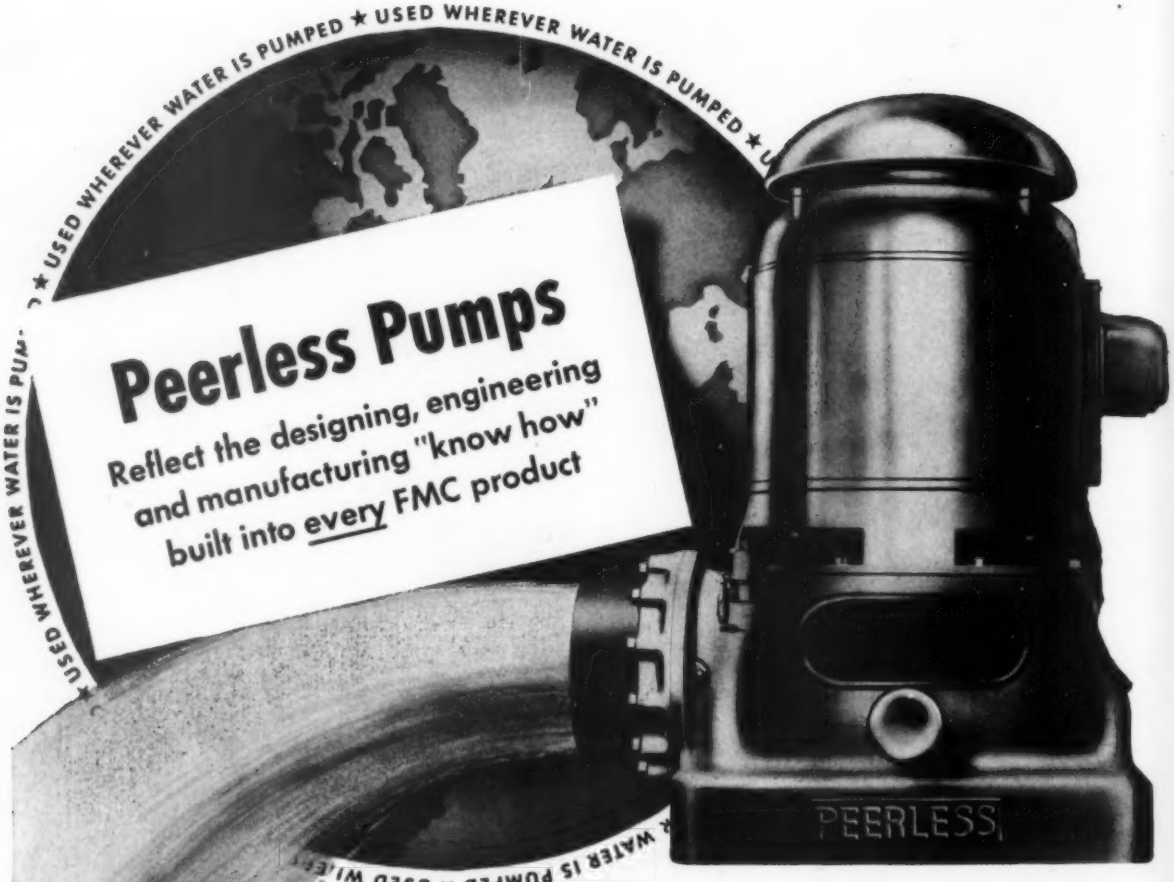
HAHN

★ STURDY
EFFICIENT ★

Hahn fire apparatus have been doing duty *since 1907* saving property and giving fire protection to many cities and communities. OUR AIM is to continue to give you the best possible modern designed apparatus, more than satisfactory performance and long life.

★ DEPENDABLE
WELL POWERED ★

HAHN MOTORS, INC. • HAMBURG, PA.


★ USED WHEREVER WATER IS PUMPED ★ USED WHEREVER WATER IS PUMPED ★
★ USED WHEREVER WATER IS PUMPED ★ USED WHEREVER WATER IS PUMPED ★
Peerless Pumps
Reflect the designing, engineering and manufacturing "know how" built into every FMC product
PEERLESS

★ PEERLESS PUMPS are the nation's preferred turbine pumps for municipal, agricultural and industrial uses... preferred because of their superior engineering and greater mechanical stability. Peerless Pumps are products of the same company that created and builds "Water Buffalo" amphibious tanks.

FOOD MACHINERY CORPORATION

EXECUTIVE OFFICES: SAN JOSE, CALIFORNIA

Peerless Pump factories at Los Angeles and Fresno, California; and Canton, Ohio

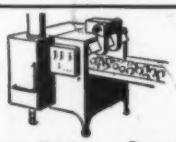
LAKELAND RIVERSIDE HOOPESTON

Other Typical FMC Products

JOHN BEAN MFG. CO.... Fog Fire Fighters, Bean Royal Spray Pumps, Automotive Service Station Equipment. Lansing, Michigan.

Sprague-Sells Division ... A complete line of machinery for canning foods. Hoopeston, Ill.

Anderson-Barngrover Division Complete line of machinery for canning foods. San Jose, Calif.



Texas Division ... Protective Processes, Canning Machinery, Fruit and Vegetable Packing Equipment. Harlingen, Texas.

Florida Division ... Citrus and Vegetable Packing Equipment, and Food Protective Processes. Dunedin and Lakeland, Florida.

Niagara Sprayer & Chemical Co. ... Insecticides for protecting crops from insects and disease. Middleport, N.Y.; Jacksonville, Fla.; and Burlington, Ont., Can.

Riverside Division. Citrus Packing Equipment, Automatic Box Making & Lidding Machinery. Fruit and Vegetable Protective Processes. Riverside, Calif.

Bean-Cutler Division. Sprayers, Dusters and Packing House Equipment for Fruits & Vegetables, Fog Fire Fighters, Turbine Pumps. San Jose, California.

Peerless Pump Division. Deep well turbines, hi-lifts & pumps handling water for every purpose. Los Angeles and Fresno, California; and Canton, Ohio.

QUADWAY NOZZLE

Announced by

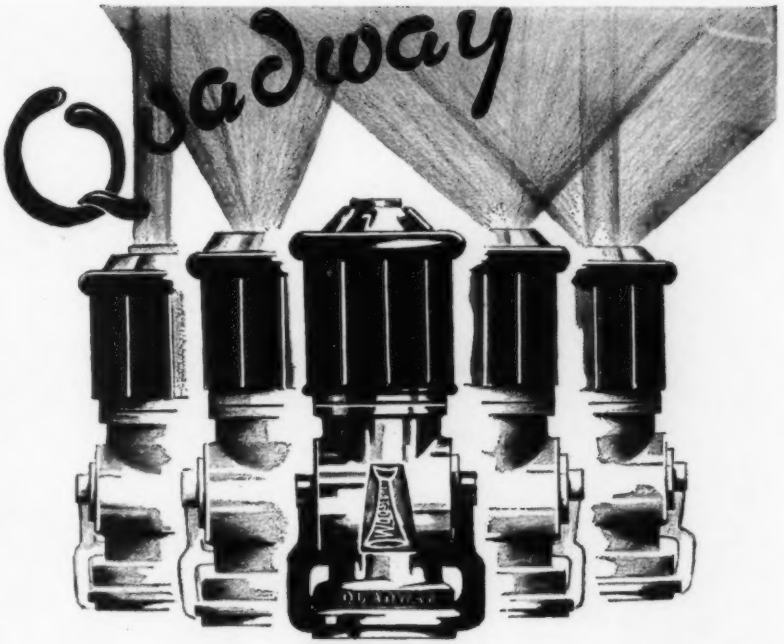
THE WOOSTER BRASS COMPANY

Once again meeting the demands of practical fire fighters The Wooster Brass Company announces the QUAD-WAY Nozzle.

Ever since finely divided water was introduced as a medium of fire fighting, engineers have been working to produce for the fire fighters a practical combination nozzle. One that would develop an adjustable vapor and at the same time produce a solid straight stream as efficient as a conventional plain beaded tip and shut-off. The personnel of The Wooster Brass Company has used its scores of years of experience in the manufacture of fire fighting equipment for the development and testing of the QUAD-WAY Nozzle. Each employee is proud of the part he has played in making possible presenting the fire profession with this truly ALL-PURPOSE nozzle that is practical and efficient.

Here are some of the construction advantages of the QUAD-WAY. Check them for yourself.

1. IMPINGING SERRATIONS and JETS produce an effective vapor pattern over the entire range of vapor adjustment.
2. SEPARATE WATERWAYS for vapor and solid stream—operated together or separately, neither stream impairs the effectiveness of the other.
3. SEPARATE SHUT-OFFS. The non-leak shut-offs on both vapor and straight streams operate independently of each other. COMPLETE shut-off is obtained by closing the straight stream handle and turning the forward ribbed section of the nozzle down tight. All seating surfaces of both shut-offs are ground metal-to-metal contact.
4. POSITIONING BRIDGE-SUPPORTS scientifically placed to assure uniform alignment at all times between straight stream and vapor-producing sections—thus assuring a perfect vapor pattern at all adjustments.
5. SELF-FLUSHING STRAINER construction of the QUAD-WAY Nozzle assures a non-clogging vapor stream. The flushing action is accomplished by momentarily opening the straight stream shut-off. (When straight stream is being used in conjunction with vapor, the flushing action is CONSTANT.)
6. LEAKPROOF construction throughout. Special care has been taken in designing the QUAD-WAY Nozzle so that leaking connections with their danger and inconvenience are eliminated. Super-tested at factory. As is the case with all "Trumpet-Nozzles, each QUAD-WAY must pass a working test of 500 pounds pressure. This test is far in excess of any pressure it will undergo in actual usage.
7. PRECISION-MADE. The QUAD-WAY Nozzle embodies the highest type of machine work and skilled craftsmanship. Heavyweight, durable bronze used throughout.



4 NOZZLES IN ONE

QUAD-WAY ALL-PURPOSE NOZZLE

SOLID STRAIGHT STREAM ONLY

Solid straight stream same as obtained through efficient conventional shut-off with regular length open tip.

VAPOR OR FOG ONLY

Vapor only, for liquid and confined fires with adjustable range approximately 20° to 160° angle, inclusive. Combination of impinging serrations and jets produces homogeneous vapor pattern.

SOLID STRAIGHT STREAM and WATER CURTAIN

Solid straight stream in combination with water curtain for fireman's protection against excessive heat, also to dissipate poisonous smoke, fumes, and gases.

COMPLETE SHUT-OFF

Conventional shut-off of both vapor and solid stream with the well-known CUSHION-BALL shut-off.

The "Trumpet" QUAD-WAY Nozzle represents a pronounced advancement in nozzle construction, adaptability, economy, and fire-fighting efficiency. Here, in ONE UNIT are incorporated all the necessary features that make instantly available any combination water stream to meet emergency developments in fighting practically any type of fire. Operation is simple, quick, and positive.

IMPROVES THE FIRE-FIGHTING EFFICIENCY OF ANY DEPARTMENT —LARGE OR SMALL

Time and man-power are always at a premium in fighting fires. With the QUAD-WAY Nozzle no time is lost in selecting the correct type nozzle after surveying the fire. This new all-purpose nozzle transforms every hoseman into a COMPLETE fire-fighting unit. Experienced firemen are always prepared for sudden developments in fighting fires which may demand an immediate change in technique. Heretofore, it often meant precious minutes were lost changing nozzles. With the "Trumpet" QUAD-WAY Nozzle no changes are necessary—yet you are constantly prepared with the CORRECT WATER STREAM to suit the requirements of any fire situation.

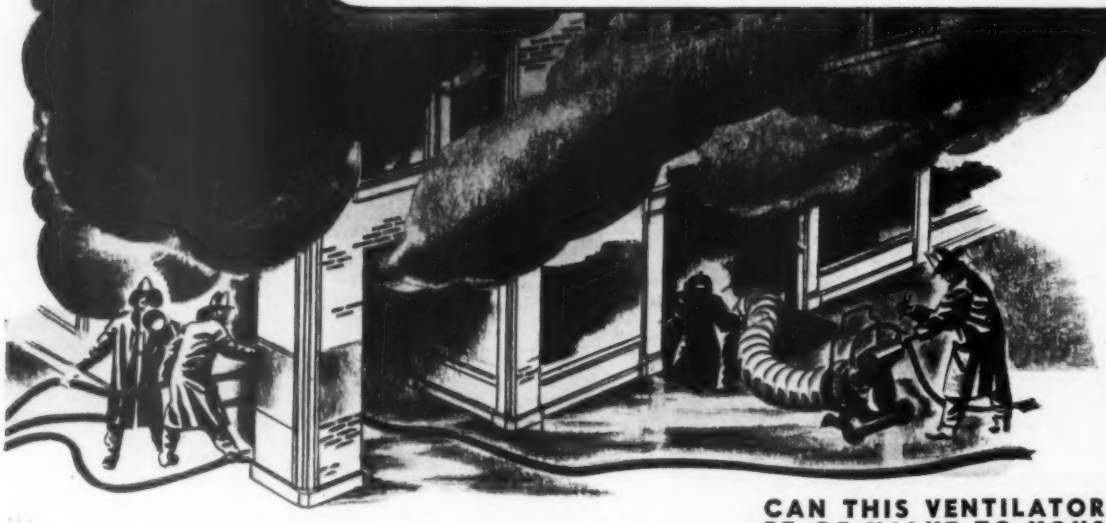
SEE YOUR LOCAL FIRE DEPT. SUPPLY DEALER FOR A DEMONSTRATION OR WRITE ON MARGIN AND MAIL IN

THE WOOSTER BRASS COMPANY

Fire Equipment of Distinction

WOOSTER, OHIO J. C. SCHELLIN, Pres.

Will this Ventilator help you FIGHT FIRE?



THE ARMED FORCES are using the Herman Nelson Self-Powered Ventilator to blast outdoor air into or exhaust interior air from shelters and aircraft interiors which have become excessively hot from the tropical sun.

It is probable that the ventilating efficiency of this product will also prove to be of value in dispersing smoke and gases from fire areas.

The ventilator is entirely self-contained, compact and portable. It may be used as shown above to furnish large quantities of outdoor air into a smoke and gas-filled interior, or, with the ventilator placed within the interior, it will eject smoke and gas-laden air to the outdoors through a 16 foot collapsible, fire-resisting duct.

If YOU ARE INTERESTED *in this new product, please fill in and return the convenient coupon for further information. We will greatly appreciate any comment you might make on the use of this product as an aid in fighting fire.*

CAN THIS VENTILATOR BE OF VALUE TO YOU?

- **Provides a fresh air zone into the fire area to disperse smoke and gases.**
- **Completely portable. Only 24⅝ inches high, weighing only 87 pounds — easily moved on rubber tired wheels or even lifted if necessary.**
- **Fire resisting canvas, collapsible duct.**
- **Simple Operation — a small gasoline engine drives a pressure-type fan which propels the air through a collapsible duct to the area to be ventilated. The engine exhaust is carried away from the unit through a flexible, metal hose which is equipped with a muffler.**
- **Inexpensive—every truck could have one.**

Self-Powered Ventilator with duct collapsed within the metal collar of the discharge opening.

THE HERMAN NELSON CORPORATION, Moline 5, Illinois

Please send more information about the Herman Nelson Self-Powered Ventilator.

YOUR NAME _____ TITLE AND DEPARTMENT _____

ADDRESS _____

CITY _____ STATE _____

SQUEEZ-GRIP — *For Carbon Dioxide Is the Navy Standard*

Most people think of fire extinguishing equipment in the terms of fire departments, hose, water and chemicals. But to the modern-thinking executive it is the extinguishing equipment that will put out a fire the quickest and with the least damage to materials, property and production. The SQUEEZ-GRIP valve originated by C-O-TWO, is now specified by the Navy Bureau of Ships. It is the most modern release for carbon dioxide portable extinguishers. Even an inexperienced person can operate the SQUEEZ-GRIP. No handwheel to turn; no need to set the extinguisher down. Nothing to do but squeeze the control lever over the carrying handle; aim the discharge horn at the fire; it is extinguished in split seconds—without damage to materials or equipment. SQUEEZ-GRIP Saves Time, Saves Gas, Saves Lives.

It's Quicker, It's Faster.

C-O-TWO FIRE EQUIPMENT COMPANY

NEWARK 1, NEW JERSEY

Knocks Out Large or Small Fires
FAST- with a Wallop
Backed by 3-TONS of Cardox CO_2

Packing a wallop of 3 tons of zero-cold liquid carbon dioxide, Cardox Fire Trucks provide extinguishing coverage heretofore beyond the scope of any mobile CO_2 equipment other than the Cardox Airport Fire Truck.

Ready to roll at the first flash of fire . . . a Cardox Fire Truck goes into action fast . . . knocks out fires quickly. For the first time, it enables a single mobile unit to meet 5 basic requirements.

1. IMMEDIATE EXTINGUISHMENT and COOLING . . . Always ready, always under its own pressure, Cardox CO_2 is applied in a *mass* discharge . . . hundreds of pounds per minute of it . . . that extinguishes fire and cools out fire zone and combustibles.

2. WIDE COVERAGE for INDOOR or OUTDOOR HAZARDS—Enclosed spaces can be *totally flooded* quickly. Momentary *area flooding* backed by 3 tons of Cardox CO_2 can be achieved outdoors.

3. LARGE CAPACITY—Even relatively large fires are within the scope of Cardox Fire Trucks. Equally important, numerous smaller hazards requiring proportionately smaller extinguishing applications, can be given uninterrupted protection with a single filling of Cardox CO_2.

4. UNIFORM, ENHANCED EXTINGUISHING PERFORMANCE—Carbon dioxide, one of the fastest of all extinguishing mediums, is given enhanced fire extinguishing performance through Cardox control and engineered application. CO_2 released at 0°F. and 300 p.s.i. yields approximately 45% CO_2 snow (dry ice at minus 110°F.) —provides more effective projection, and increases cooling effect.

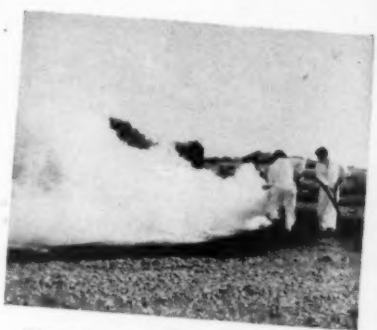
5. NON-DAMAGING, NON-CONTAMINATING—Cardox CO_2 is clean . . . dry . . . does not contaminate oil or gasoline . . . does not damage class "A" combustibles. It can be applied directly to electrical equipment.

Write on company letterhead for Bulletin 2484.

CARDOX CORPORATION
BELL BUILDING • CHICAGO 1, ILLINOIS

District Offices in New York • Boston • Washington
Detroit • Cleveland • Atlanta • Pittsburgh
San Francisco • Los Angeles • Seattle

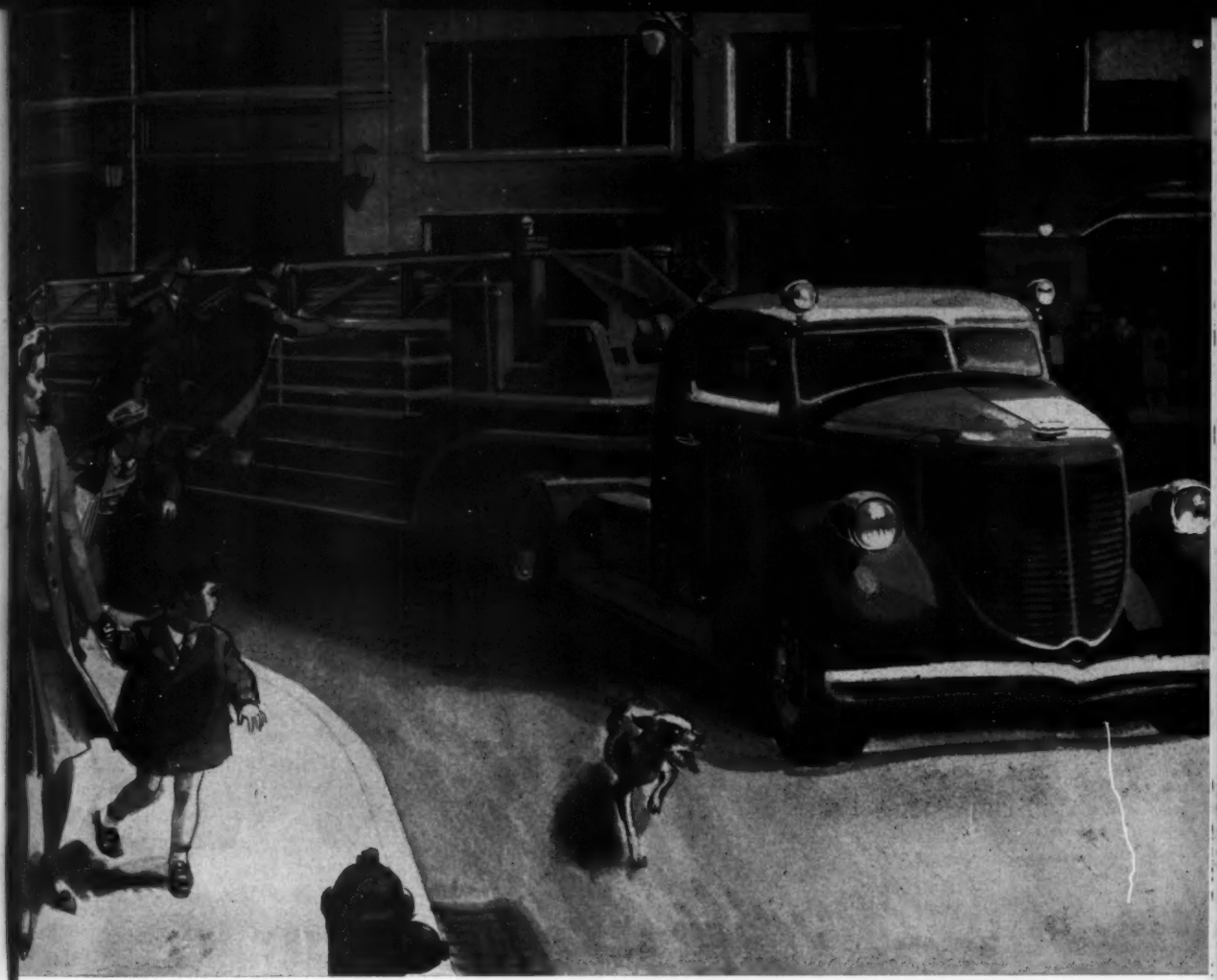
Mass discharge of Cardox CO_2 at approximately 700 lbs. per minute from one of Cardox Fire Truck's two hose lines, as operator approaches fire fed by 100 gallons of high test gasoline.



Blanket of cold, inert Cardox CO_2 smothers the fire and cools the fire zone.

Note CO_2 snow around pool. *Many* fires such as this can be extinguished with *a single filling* of the 3 ton Cardox Fire Truck storage tank.

CARDOX
CO_2 FIRE EXTINGUISHING SYSTEMS



ALERT TO ANY EMERGENCY

Bendix-Westinghouse congratulates that leadership of the nation which recognizes the pertinent fact that the world's most effective safety campaign begins right in City Hall and whose safety records with Bendix-Westinghouse Air Braked Units vindicate their excellent judgement ★ If you haven't investigated the "Quick Action" Air Brake developed expressly for Fire Department use, you have a very agreeable surprise in store ★ Consult your local Bendix-Westinghouse Distributor or write direct to the Bendix-Westinghouse Company, Elyria, Ohio for complete information, without obligation.

These World Famed Manufacturers of Fire Fighting Apparatus Recommend and Furnish Genuine Bendix-Westinghouse Air Brakes Upon Specification:

AMERICAN-LAFRANCE-FOAMITE CORPORATION
BUFFALO FIRE APPLIANCE CORPORATION
MACK MANUFACTURING CORPORATION
PETER PIRSCH & SONS COMPANY
THE SEAGRAVE CORPORATION
WARD LAFRANCE TRUCK DIVISION

Bendix-Westinghouse

AIR BRAKES

AND PNEUMATIC CONTROL DEVICES

IT IS SIGNIFICANT THAT AMERICA'S FOREMOST FIRE DEPARTMENTS HAVE ADOPTED BENDIX-WESTINGHOUSE AIR BRAKES AS STANDARD

"FOR THE GREATER PROTECTION OF LIVES AND PROPERTY"

The Fire Chief—charged with grave responsibility to the community he serves—cannot compromise with quality in the equipment his men use.

For more than half a century Eureka Fire Hose has had the complete confidence of fire fighters in communities throughout America.

Today, Eureka Fire Hose utilizing linings compounded of synthetic rubber continues to uphold that carefully guarded reputation. These new linings have been especially developed to prevent the formation of that destructive solution within the hose which has been more or less common in all fire hose in the past.

By means of the Oxygen Bomb test, the superior aging qualities of Eureka Fire Hose Linings have been scientifically proved.

Balanced weaving of the jacket prevents snaking or writhing when the line is charged. The fabric is woven on special looms for a smooth internal finish and is treated against mildew and rot.

Eureka Fire Hose can be counted on for absolute faithfulness to duty, and for economical service under all conditions.

An Invitation

to Convention Delegates

INTERNATIONAL ASSOCIATION OF FIRE CHIEFS

You are cordially invited to make the Eureka Fire Hose Booth your headquarters for the duration of the convention, and to familiarize yourself with the newest developments in fire hose construction.

GRAND RAPIDS, MICH., AUGUST 28th to 31st

BOOTH 72

EUREKA

EUREKA FIRE HOSE

Division of United States Rubber Company

1230 SIXTH AVENUE • ROCKEFELLER CENTER • NEW YORK 20, N. Y.

We shall appreciate your mentioning FIRE ENGINEERING *when writing advertisers*

For Greater Efficiency

PacKo

AN INVALUABLE APPLIANCE FOR FIRE FIGHTERS

ON LAND

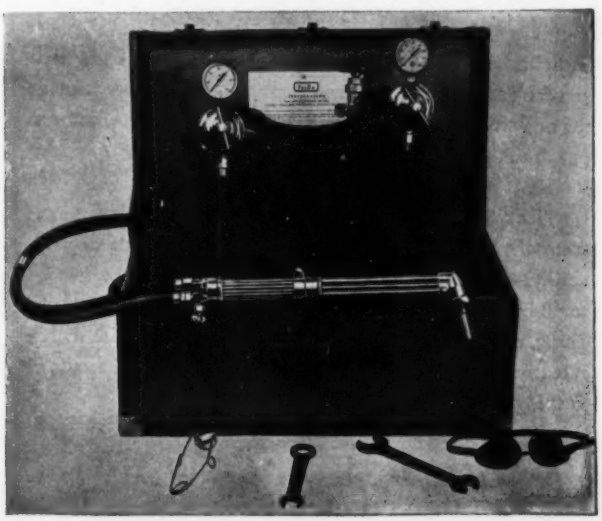
ON SEA

IN THE AIR

The Packo Emergency Cutting Equipment Is Doing a Worthwhile Job—Where Steel Bars the Way

KNOWING the needs of the fire departments, this appliance was designed and perfected by practical fire fighters and considered by all fire chiefs to be one of the most modern pieces of equipment. No fire department is completely equipped without several units in service.

AS A forcible entry tool, by the removal of obstructions to fire fighting forces, enabling them to get to the source of the fire quickly. The prompt removal of steel doors, locks, steel bars, iron gratings, iron shutters, means rapidity in action in attacking fires, and cutting away structural members in wrecks on highways, railroads, airports to release persons who may be imprisoned under debris. In attacking fires in vessels, by cutting through steel decks, bulkheads, etc. to attack fire with solid and fog streams and other fire fighting agencies.



The WELDERS SERVICE COMPANY, Inc.

210 BLVD. OF ALLIES, PITTSBURGH, PA.

New York Office, 17 East 42nd St., New York, N. Y.

We shall appreciate your mentioning FIRE ENGINEERING *when writing advertisers*

HALL-SCOTT "400" PACKS THE PLUS POWER TO HANDLE 2000 GALLON PUMPERS

One of the latest Peter Pirsch pumpers. It is equipped with a four-stage centrifugal pump, capacity 1500 gallons. Powered by a Hall-Scott engine.

...and that's just one advantage!

In fighting a 3-alarm blaze, experienced firemen know that you can't send a boy on a man's errand — or a pumper without the capacity to handle the job. But it takes a *man-size* motor to power the pumper — and the new Hall-Scott "400" *has what it takes!*

With a 5¾" bore, 7" stroke and 1090 cubic inch displacement, the Hall-Scott "400" is loaded with power and dependability — with the pick up to get there fast and to deliver 24 to 48 hours of steady pumping. And hour after hour on level going, uphill and down, the "400" comes through with its full rated horsepower at *less* than 2200 RPM — a vital factor in keeping motor maintenance costs down.

Tested around the calendar for more than half a million miles over the toughest going in all kinds of temperatures, not a single major failure developed and maintenance costs were amazingly low, considered by ANY standard.

Compact and weighing only 2190 pounds, completely equipped, the Hall-Scott "400" will fit under hoods designed for engines of less horsepower — a definite advantage to those considering re-powering. Last but by no means least, the traditional Hall-Scott unit design permits any engine part to be removed for servicing, a spare installed and the vehicle returned to the job while repairs are made as convenient.

HALL-SCOTT
THE HALL-MARK OF QUALITY

HALL-SCOTT *Motor Car Company*

DIVISION OF AMERICAN CAR AND FOUNDRY MOTORS COMPANY
Main Offices and Factory: BERKELEY, CALIFORNIA
Branches: NEW YORK • SEATTLE • LOS ANGELES

TODAY as in 1915 CRACKERJACK HOSE is tops for reliability

In 1915 this steam-pumper at the Panama-California Exposition was the last word in fire engines. Even in those days, Crackerjack was known as a remarkably reliable hose. Since then, thirty years of experience have made it even more dependable and durable than ever.

The AMERICAN RUBBER Mfg. Co.
OAKLAND, CALIFORNIA
ALSO MAKERS OF IMPERIAL, AMERICAN, MUNICIPAL AND TIGER FIRE HOSE

HOT . . . but not bothered

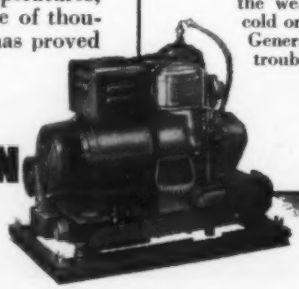
And when we say "hot", we mean 120° in the shade . . . and of course, much hotter inside the gasoline engine of a Homelite Portable Generator. But there's no question of "burning up" . . . for the engine is air-cooled. There's no radiator to boil over or run dry.

A large fan on the flywheel sends a constant blast of air over the cylinder. Shields direct this air across the fins of the aluminum cylinder . . . providing maximum cooling. Complete lubrication is assured . . . for oil is mixed with the gasoline and sprayed under pressure into all moving parts. No sludge . . . no dirty oil . . . for a fresh, clean film of oil enters the crankcase with each revolution.

And the most interesting thing is this . . . the means of protecting a Homelite from heat, is also the means of protecting it from cold. There's no radiator to freeze. And lubrication is the same hot or cold . . . for oil mixed with gasoline won't congeal, even at sub-zero temperatures.

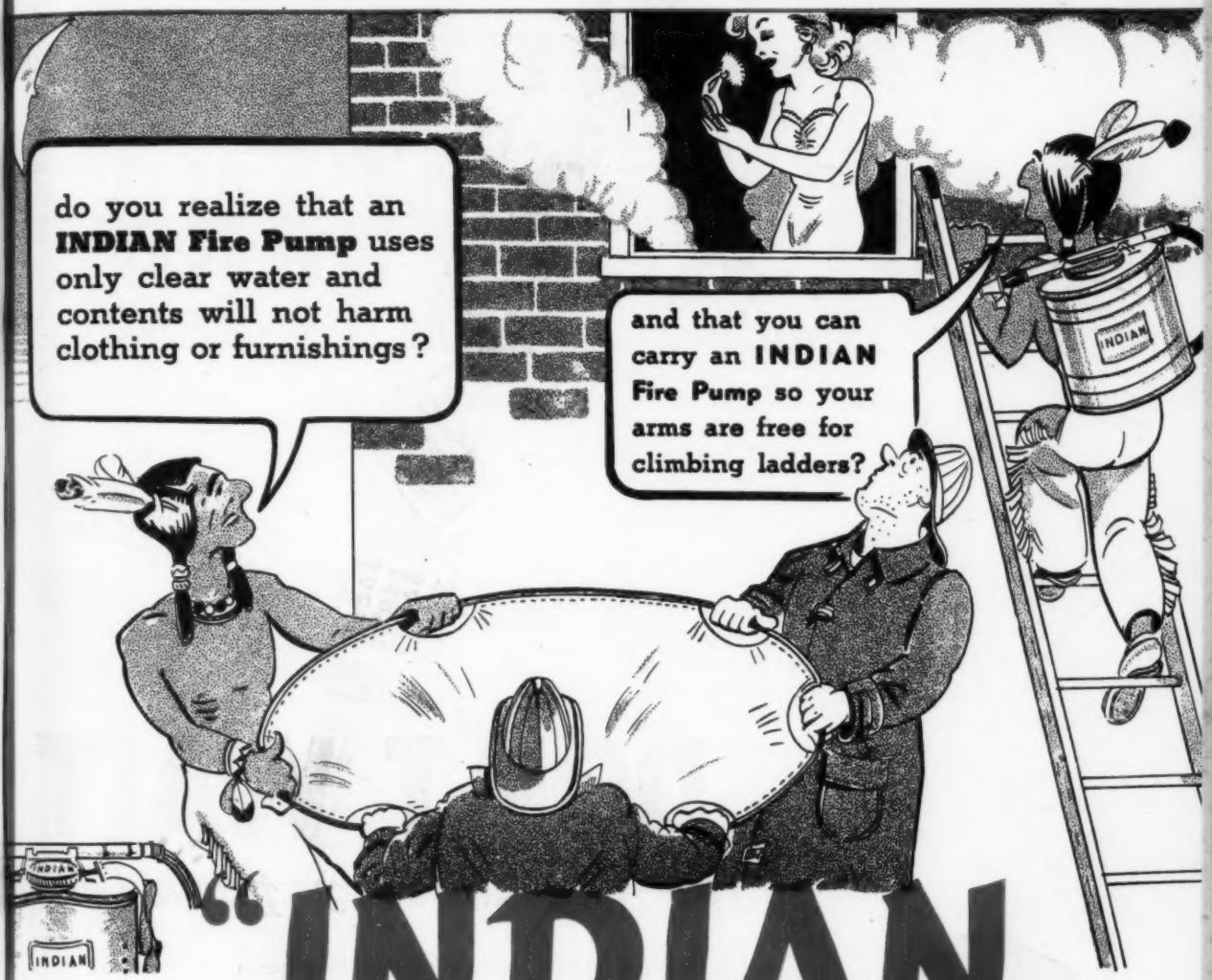
From broiling tropical heat down to sub-zero arctic temperatures, a Homelite performs without trouble. The performance of thousands of Homelites with the armed forces everywhere has proved this point *plenty*.

A fire can start anytime. In fact the worst fires seem to come in the worst weather. That is one reason why so many fire departments insist on a Homelite Portable Generator to supply power for operating brilliant floodlights. Regardless of the weather . . . it can be freezing cold or broiling hot . . . a Homelite Generator will purr away without trouble or manual attention.



HOMELITE CORPORATION
PORT CHESTER, NEW YORK

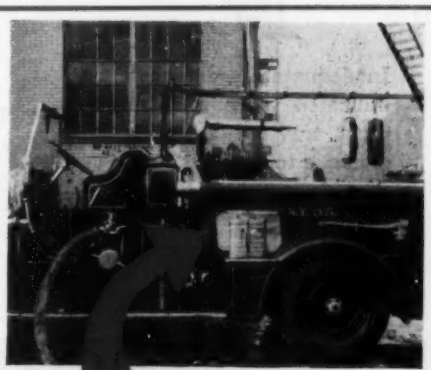
FIRE 'N PUMP The *"Injun" House* Twins By D. B. SMITH & CO.


do you realize that an INDIAN Fire Pump uses only clear water and contents will not harm clothing or furnishings?
and that you can carry an INDIAN Fire Pump so your arms are free for climbing ladders?
INDIAN
INDIAN
INDIAN

"INDIAN FIRE PUMPS are as efficient *inside* for the same size fires as they are *outside!*"

THAT is what fire departments tell us who use *INDIAN FIRE PUMPS* under any and all conditions where Class A fires have not developed beyond the initial stages. *INDIAN FIRE PUMPS* will often do the job without laying a foot of hose. Firemen with pumps slung on their backs can move about quickly without having to stop and pick up the extinguisher as they fight the fire.

Big 5 gal. tank can be kept filled with water continually and you are always ready for immediate action. There are *no chemicals* necessary. Clear water is available anywhere—costs nothing—and does not injure clothing or furnishings. *Write for catalog and many testimonials of users.*



Tank is [illegible] cooled preventing dampness reaching the back. [illegible] nozzle adjusts for spray or powerful pressure [illegible]eam. Entire outfit is strongly built. (Above) An INDIAN FIRE PUMP in carrying rack on New York City apparatus.

D. B. SMITH & CO. • 406 Main Street • UTICA, N. Y.

Pacific Coast Branch: Hercules Equipment & Rubber Co., 435 Brannan St., San Francisco, Cal.

Roy G. Davis Co. [illegible] Los Angeles 15, Calif. Gene-Cunniff Co. [illegible] S.W. Pine St., Portland 4, Oregon The Cunniff Co. Klamath Falls, Oregon Hill & Stine Supply Co. [illegible] Ave., Seattle, Washington

POST WAR PLANS

for a complete ALARM SYSTEM

TOWNSHIP MAP
Not more than 300 feet in congested districts, 500 feet in closely built residential districts, nor 1000 feet in other districts should be required to reach an alarm box. (Standard of box distribution.)

DON'T WAIT

for the victory parade!

Inadequate fire defense is indicated when a citizen must traverse a greater distance to send an alarm than is required by the recognized standard of box distribution.

FIRE CHIEFS are aware that inadequate fire defenses have contributed heavily to the annual fire loss and that in the pattern for post-war reconstruction there should be no latitude afforded for needless waste—but are other municipal officials and citizens equally fire-conscious? Are they aware that the national fire waste, direct and indirect, annually exceeds a billion dollars plus ten thousand human lives—that much of this loss is avoidable—and that delays in the transmission of alarms due to inadequate box distribution is a major factor therein.

Plans to eliminate deficiencies in the fire defenses should now be initiated and actively advocated until assured of their merited position on the municipal program—and, remembering that your fire department remains inert until an alarm is given, a complete fire alarm system with boxes conspicuously installed and readily accessible at all points of fire hazard should be the basic element in your plans.

THE GAMEWELL COMPANY
Newton Upper Falls, Massachusetts

FIRE ENGINEERING

AUGUST, 1944 VOL. 97, No. 8

With the Editor

Fire Protection For Airports

The request of the Civil Aeronautical Administration for $1,000,000,000 for construction of a network of 3,000 private and commercial airports to bring air transport service to 1,827 cities instead of the present 286, and the claims of those who are in a position to set the policy that we may expect to see a tremendous increase in planes in commercial and private air transport after the war, should have the serious thought of the fire service. To the best of our knowledge no provisions for fire protection of these new airports or "parks" are included in the government program. If, as it is claimed, these new fields in many cases will be located adjacent to populated areas, it would appear that here will be increased work for the fire service.

Although we may be out of order, it seems to us that the fire service, through the International Association of Fire Chiefs and possibly other organizations such as the National Board of Fire Underwriters, should have a voice in the matter of fire protection for these proposed airports.

Limitations of OCD Gas Masks

Information has been received from the Office of Civilian Defense, Washington, that OCD-issue gas masks are being used by members of the Fire Service in an attempt to fight smoky fires.

We have been asked to point out that these OCD masks were never designed or made for such purpose and their use at fires where carbon monoxide may be present may have very serious negative result.

As this publication has repeatedly emphasized, civilian protection fire fighting equipment was created as a war emergency measure; it has certain limitations and should be used only with those limitations constantly kept in mind. This applies also to OCD gas masks. So used, it had, and may still possess, a certain temporary value. But it must never be forgotten that at best this emergency equipment deteriorates more rapidly than normal, standard products with which the Fire Service is familiar, and upon which it has relied over many years and upon which its future successful fire fighting operations depend.

Building Codes Ignored by F. P. H. A.

The Federal Court of Appeals at Philadelphia has just handed down a decision upholding the right of the Federal Public Housing Authority (F. P. H. A.) to ignore local building codes and regulations in constructing homes for war workers.

The only logical reason for the Authority's desire to circumvent local laws is that such action enables the F. P. H. A. to erect cheaper houses by eliminating fire and life safeguards deemed necessary by the city fire and building departments.

Were these buildings to serve only for the duration, the problem would not be so troublesome, but they will undoubtedly be permanent additions to the cities adjacent to or within which they have been erected. Permitting such substandard developments to be erected will set back the fire prevention programs of cities many years.

It has been a long and difficult struggle to eliminate fire traps from growing cities. The creation of these hazardous residential districts will undo the work of years.

Providing satisfactory fire protection for these areas will impose a huge burden on fire departments which are both undermanned and inadequately equipped.

Some Army and Naval establishments now call in local fire department officials for consultation before constructing new buildings, and frequently incorporate fire protection features recommended by these officials. It seems to us it would be a sensible policy to use the services of these skilled fire fighters in a similar manner when war housing projects are being planned.

Fred Sheppard

What Post-War Changes in Fire Apparatus?

Prominent Fire Chiefs Review Possible Changes in Design of Apparatus During Post-War Years

WHILE there has been a great deal of talk in fire circles about extensive changes of radical nature in fire apparatus during the early post-war years, it is not likely that any major changes will appear immediately after the war.

The problem then will be to build up production promptly in order to supply the latent demand for apparatus and equipment.

Inability during the war years to secure necessary fire apparatus has created a large backlog of potential orders, and these must be taken care of as rapidly as possible when materials again become available in quantity for the manufacture of fire apparatus and equipment.

However, in order to find out what changes were considered desirable, and what features should be incorporated in new designs of apparatus, a survey was made among a group of representative fire chiefs, located in all sections of the country.

There comments and suggestions are published in full in the following paragraphs.

A review of these discussions will be useful in giving a picture of what fire chiefs will be looking for in the way of post-war apparatus when manufacturers eventually have time to develop the new models:

North Central City, Population 575,901: I personally believe that the fire apparatus built today is too large and cumbersome. It is difficult to handle some of the apparatus on the narrow streets in residential areas.

I believe that the type of pumper made in 1920 with a little stream-lining would be ideal at the present time. The drivers of apparatus are handicapped, if they are not in a position to observe traffic conditions some distance in front of them. The cab over engine type would be of great advantage to the driver. A closed cab with valves and operating levers in the cab would be a fine feature.

A thousand gallon capacity pumper is practically standard in our city. The suction connections on each side of apparatus under driver's seat give us good results. I believe all pumpers should be equipped with 100 gallon booster tank capacity, with the hose reel located above tank, forward end of hose box.

Northwestern City, Population 122,001: The following are some suggestions as to the manufacturing of post war fire apparatus. First of all every apparatus of hose wagon type should be a pumper regardless of water pressure and water system of cities, towns or rural communities, due to the fact that one never knows when such water system may be put out of commission.

The apparatus should be somewhat more streamlined with motors large enough for maximum service of at least 50% over specifications to make allowance for steep hills and road conditions. It should be large enough to power the water pumps so that the motor will never have to be operated at a dangerous rpm. We have found many motors in the past have been under horse-powered and had to be abused. This brings on many unnecessary breakdowns and trips to the shop and causes apparatus to be put out of service for repairs.

The capacity of the pumps should not be under 750 gallons. This type would be the most practical for most cities or towns. Price should have no consideration and performance should be the byword.

All apparatus should have booster tanks and not under 200 gallon capacity. Records show better than 85% of fires are extinguished by small lines. Weight should be more evenly distributed than in the past; most apparatus with large motors, water pumps and booster tanks have been placed too far to the front of the frame. This has caused the apparatus to go out of control whenever wet, frozen and icy road conditions were encountered. Booster tanks on apparatus should be distributed on the frame and under the hose beds. This brings an equal distribution of weight over the rear axle.

Hose beds should be constructed to carry not less than 1800 or 2000 feet of 2½" hose as in every city or community, hydrants in the far out residential districts are far apart.

Drainage petcocks on the booster lines and pump lines should be placed at not more than two places in the lower part of the drainage system. Many of the prewar apparatus had as many as eight and ten drainage petcocks.

Running boards should be wide. This gives more safety to the men. Open hose beds are more efficient and speed up reloading of hose and also give more ventilation for hose lessening possible mildew. Cabs are some protection to the men and should be included on every apparatus. Apparatus for rural districts and residential districts of the large cities should be of the enclosed type.

All pumpers should be equipped with siamese D gate valve controlling intake adaptors reducing from four, five and six inch intakes down to two and a half inch. This will speed up pump hookups and bypassing from hydrant to apparatus through pump to booster tank. All outlet valves on pumps should be equipped with individual pressure gauges so that the operator may know the correct pressure to give when pumping through long and short lines at the same time.

The booster tank should have a filler cap of the milk can type so that if operator forgets to close booster intake valve when operating directly through, pump will not rupture booster tank.

Exhaust priming in the latest build apparatus seems to be more efficient and faster than the priming pump type. Pump types have given much trouble in the past due to leaky gaskets and connections and many of the priming pumps develop air locks that are hard to eliminate.

I might also add that the amount of torque should be included in all specifications and not horsepower.

New England City, Population 253,504: Relative to suggestions and recommendations for improved post-war fire apparatus I list herein my recommendations for improved apparatus—

PUMPERS

Semi-enclosure, canopy type, with ladders mounted in side of apparatus.

Pump and motor location conventional.

Motor horse power 250.

Pump capacity, 750-1000-1250-1500.

Intake for suctions on both sides and rear.

Hose bodies to have center aisle with hose compartments on each side.

Booster tank capacity, 300 gallons.

Full protection for gates and gauges.

Booster keel to be located over body.

Higher angle of vision for better vision, of fenders for traffic clearance.

Electric siren to be mounted in front of radiator.

Defroster that will function quickly and not be a drain on battery.

LADDER TRUCKS

Semi-enclosure, canopy type, with ladder mounting inside of body.

Tractor drawn trucks (aerial).

Electric sirens mounted in front of radiator.

Higher angle of vision for better vision of fenders for traffic clearance.

I would like to see the development of amphibious type of apparatus to be used on land or water. I think this type would have great possibilities in future needs of fire fighting.

Pacific Coast city, Population 203,341: It is difficult to foretell just what will be most required, but I believe that there will be fewer models and more standardization in fire apparatus. Pumping engines of 500, 750, 1000, 1250, and 1500 G.P.M. capacity will be standard with intermediate models done away with. This standardization should result in reduction in price of factory-built apparatus as well as insure more prompt delivery of apparatus ordered. Special features will need to be added by the purchaser.

I think that multi-stage centrifugal pumps have demonstrated their effici-

ency, practically eliminating rotary gear pumps except where a great deal of drafting is done in fire fighting. It has also eliminated piston pumps on fire apparatus except where extremely high pressures are frequently required (over 500 lb. per square inch).

I think that cast iron pumps will not be very much used. All pump parts will be of bronze or stainless steel.

I believe that in large cities having no high pressure system heavy pumping units up to 3000 G.P.M. will be used to furnish large capacity for large fires. Mobile pumping units to provide pumping capacity enough on first alarm response in high value districts to take care of the pumping needs of second and third alarm company response who cannot get their pumpers to the scene of fire because of traffic congestion on streets leading to the fire will be used more than they have been in the past.

The enclosed body jobs, I think, will go out of use, as fire apparatus when responding to an alarm should be stripped for action and anything that prevents unobstructed vision is a nuisance and should be done away with. This includes cab bodies. Places where the winter climate is extremely severe probably will favor retaining enclosed bodies.

I believe that the future apparatus will have suction intakes on each side and in the rear. There will be tow hooks front and rear. Dual tires on the rear have demonstrated their efficiency for traction and I believe will become universally used.

Fire apparatus is expected to have such a long life that I believe the use of replaceable sleeve inserts in motor cylinders will give the long life which is required, doing away with the need of rebored cylinders and oversize pistons in apparatus reconditioning.

Hose box with capacity for 1500' of 2½" or 3" hose will be popular with an extra hose box for 200' of 1½" hose, besides a reel for 1" or ¾" booster hose.

100 gallon water tanks will continue to be the popular size for city services with larger tanks for grass fire areas and areas having few or inadequate water mains and hydrants.

A Southwestern City, Population 204,424: I don't think anyone knows just what will happen in the fire apparatus field after the war, but, my guess is, that we will see the fire engine with a completely closed body, for the reason that closed bodies have shown their value in protecting the men from the weather as well as protecting the hose and other equipment.

As to the pumps and motors, I don't think we will see much change in the location of pumps and motors as the midship pump location has proven satisfactory, and the motor in front has served the fire service very well.

As to motor horsepower, I think the horsepower in pumping engines will be substantially increased as it can be done without increasing the weight with the new high speed engines. Pump capacity no doubt will remain about the same, with the three standards or the three commonly referred to as standard 500-750-1,000-gallon per minute. However there is now and it will become more popular in the larger cities in the future the 1,250-gallon pumping engine and I think in the future there will be developed a fire engine that will serve in all the capacities, having sufficient power and a varied pump range that will meet nearly any requirement and still have an economical purchase price and economical operation.

Suction hose connections I think will remain both side and rear connections as this has proven very convenient, ladders no doubt will be enclosed, this furnishes protection for ice and weather of all kinds.

Booster tank capacities I think will be increased to as much as 300-gallon for every engine, this would greatly improve the efficiency of the engine company, this in my opinion only, and I am conscientious about it, as I have seen the operation of booster tanks many times at fires where their capacity was not sufficient and in my opinion this will be increased in the near future.

A Midwestern City, Population 3,396,808: I believe there will be many changes all tending to improve the efficiency of fire apparatus. I also believe that the restrictions placed upon us during this war have made us think in terms of reasonable economy and increased efficiency.

Specifically, I feel that the trailer pumping apparatus has a definite place in rural departments and that a certain percentage would be valuable assets to metropolitan fire departments; and with the strides that have been made in developing metals and metal alloys, it should be possible to refine this type apparatus whereby it will have comparable (or even greater) pumping capacities than the standard apparatus now in use.

In fire departments of metropolitan cities of this country, the same thought can apply whereby the increased horsepower already developed in ratio per pound of engine weight, will permit pumping apparatus of from two to two-and-one-half times greater capacity than is now in use and service without having to increase dimensions; also weights of other materials used in the construction of apparatus will be materially reduced without sacrifice to durability.

I favor 1000-gallon pumping capacities at 150-160 lbs. pump pressure with the location of cab "forward" for better maneuverability and driving safety; and suction connections located forward and on both sides. A booster tank of adequate capacity (not less than 200 gallons) should be provided where fire mains or other water supplies are not easily accessible or available. Cab or sedan type pumpers may be designed if climatic conditions warrant. Ladder mountings to be arranged to provide for the least amount of overhang.

Pacific Coast City, Population 164,271: My recommendation for standard fire apparatus design for this city would be:

Triple Combination: 6 cylinder, slow speed, high torque, high horsepower. Minimum should be 155-HP: 400 lb. torque; 510 cu. in. disp. Dual ignition, two distributors, two batteries. Four speed transmissions; 4th speed—direct drive. No radiator heater needed if shutters provided. Hydraulic brakes (4 wheel) for apparatus under 12,000 lbs.: Air brakes over 12,000 lbs. Centrifugal pump, two or four stage, 750 g.p.m. at 150 lbs. capacity: 400 lbs. pump pressure desired. Suctions on each side—gated. Relief valve instead of governor. Hose outlets at rear of apparatus with control levers at operation side of apparatus. Booster tank of 100 gallons connected to booster reel at rear of under hose body. Canopy type cab over motor for firemen, entrance to canopy section through aisle between hose bodies. Hose body to be divided for 600' of 2½" hose each side with a division for 1½" hose 8" wide in right side of 2½" hose body. Space for 300' of 1½" hose. Compartments on each side of apparatus for equipment. No side running boards.

Quadruples: Same motors, transmission, brakes, pump, booster tank. Booster

Fatal Boston Fire

One man was burned to death and seven were injured in a spectacular five-alarm fire that swept through this building, occupied by several factories in Boston, Mass., on June 15. Early reports estimated damage as high as $1,500,000.

reel any accessible location. Sliding hose body for 1000' 2½" hose, 300—1½" side suction and hose outlets. Fully enclosed cab, over motor, for 6 men. Ladders, 240' double banked. To be wood beam, metal rung and strut. Compartments for equipment.

Aerial Ladder Truck: No pump, booster or hose carrying facilities. Aerial to be 65', 3 sections, wood beam, metal rung and strut. Hydraulic operated. Cab, over motor, fully enclosed for 7 men. Compartments for equipment. Prefer 4 wheel long chassis to transfer type for this size.

Note: Cab-over engines are recommended for this locality because of the better visibility and shorter turning radius they provide; and also because they use less space in the fire station.

Eastern City, Population 663,091: The same problems will attend major changes in fire apparatus as exists now. Local conditions of different communities alter fire fighting practices and their needs in fire apparatus, so, it seems unlikely that standard types of apparatus will fill all needs in the future any better than in the past.

Congested traffic of larger cities makes response to alarms both hazardous and difficult. Fire apparatus has been getting bigger and bigger, year by year. This trend should be reversed and it should be made both shorter and narrower. The use of pan-cake engines and cab-over-engine would help.

Accessibility to enable quick repairs, has been recently sacrificed for neat design. This should be restored—even to the point of providing detachable power plants, whereby reserve power units can be easily installed without the necessity for wasting time on a multitude of bolts and wiring.

The design of apparatus should be whatever will best keep it in service and most quickly restore it to service when disabled.

Southern City, Population 111,580: The following suggestions would be my recommendations in the manufacture of pumpers for the fire department:

Provide a cab with sufficient space to carry not less than five men.

I favor an open hose body with canvas cover on roller similar to window shade design; fastened at rear of cab to pull over and cover hose.

I do not favor a cab over engine arrangement.

In addition to regular fire pump, I recommend the installation of a high pressure unit pump that will develop from 700 to 800 pounds pressure at the pump in order to give 600 pounds pressure at the nozzle and a booster tank with a capacity of not less than 200 gallons, with high pressure booster hose and fog guns.

The location of the regular fire pump and the high pressure pump can best be worked out by the manufacturer's engineers.

I would request suction connections on each side and one each on front and rear.

An overhead ladder carrier of the enclosed type.

New England City, Population 110,341; I believe that in general, the design of post-war fire apparatus can be left to the competent and experienced engineering forces of our fire apparatus manufacturers. I would however, recommend for pumping units large cabs, open bodies with a minimum capacity for carrying 1000' of 2½" Hose, Diesel Engines powered to meet pump requirements, pump capacity to range from 500 to 1000 G.P.M. Average capacity of booster tanks, 200 gals.

Location of pumps, motors, suction connections or ladder mountings, optional.

North Central City, Population 287,-736: I do not believe closed bodies on pumpers would function in the severe climate which we have here. It would make it very unhandy in picking up frozen hose and returning to quarters.

Re. cabs in a congested high-value district. I am in favor of semi-cabs due to the fact that with a large cab or small cab the driver is handicapped in laying out lines especially where he must back into alleys or turn around on narrow or congested streets.

I personally am in favor of plenty of horsepower. I feel that it is better to have twenty-five to thirty-five per cent of power in reserve.

Re. pump and motor. Pump should be kept as close to motor as possible in this climate to assist in keeping the pumps from freezing. We have had very good success with the motor as now mounted. Pump capacity, I feel, should run from 750 gallons per minute in a residential district to 1500 gallons per minute in the high valued districts.

Suction connections, I believe, should be either front or rear which makes it much more convenient in making a hydrant connection. Whereas if you have your suction connection on the side as is the prevailing system, you must either have a gate valve on each side and carry two suctions otherwise there is a great deal of delay and, in many instances, it is hard to make your connection at the hydrant without either turning around or backing into same.

Hose bodies either divided or single should be open. Ladder mounting is much more handy where the ladders are placed on the outside of body. Booster tank capacity depends upon the district. In some districts you would need 250 to 300 gallons, especially in your thinly populated residential district and 100 to 150 gallons in the more congested districts.

Eastern City, Population 859,100: I feel that the manufacturers should develop specifications for apparatus contemplated in post-war plans, and I would say submit to the chiefs in various localities as to any suggestions regarding changes that should be incorporated in specifications for fire apparatus most adaptable for their localities.

Midwestern City, Population 114,966: In discussing a subject as to major changes in fire apparatus to be incorporated in post-war, I believe the mechanical engineers of both the manufacturing factories and fire departments should have meetings to discuss together such an important subject. We feel that by our experience and speaking for a city of our size, demands the contentions that each city has its own problem. That apparatus may be various capacities depending upon the need for service, as fire streams, water supply and city to be protected. As to advocating any major changes to be incorporated, the Fire Chief is possibly most interested in his respective department. I feel that our post-war program as to the demands by different cities, might bring up a serious handicap for manufacturing companies. In our city we would not consider any capacity under 750 GPM in our outlying district stations and 1,000 GPM engine pumpers in our high value district. Closed body pumpers, large cabs, with at least 250 gallon capacity booster tanks, 1,200' of 2½" hose, 600' of 1½" hose, 250' of 1" booster hose—not counting the regular manual equipment and extinguishing apparatus to be carried on same. We feel that immediately after the war the com-

(*Continued on page 524*)

Leaking Gas Causes Explosion and Fire

Gas leaking from a six-inch pipe line exploded recently at Bellflower, Cal., and turned a portion of the residential section into a flaming shambles, killing two children and injuring several others. The picture shows a column of flaming gas spiralling skyward near a partially wrecked home, while a fireman plays a stream on ruins of a second home.

What Improvements Ahead for the Fire Service?

Proposed Construction and Acquisition of New Apparatus and Equipment Indicated by Survey

By FRED SHEPPERD

BECAUSE of priorities, material shortages, and lack of manpower in industry, fire departments have had to postpone a lot of improvements since the nation became fully involved in the war. Prior to the war the depression was a factor in restricting the extent of fire service improvements.

As a result, a huge backlog of postponed work and needed equipment has been built up.

By the end of the war, two conditions will have developed:

First, there will be a need for public works and peacetime manufacturing to provide work for unemployed.

The number of workers who will be thrown on the market by the discontinuance of war munitions manufacturing and the mustering out of the armed forces has been estimated at 30,000,000.

It may take from eight months to two years before factories are re-converted to peacetime products. Thus there will be a lag in employment and a serious problem of unemployment during the interim.

Second, the improved financial condition of cities should have a marked effect upon postwar fire department improvements.

Financial Condition of Cities Good

Roger W. Babson, the noted financier, recently reported in this journal as follows: "Two years of war have radically changed fiscal conditions in practically all cities and towns in the United States; in most municipalities income has risen, expenses have dropped or been held static, and debt has been reduced. A few years ago communities faced the problem of raising revenues to meet swollen relief rolls and of calculating to what extent debt might be increased to provide for essential capital improvements. Today, municipalties generally are flush with funds, but find difficulty in obtaining materials and manpower to extend water, fire protection and sewage services, or to erect needed public buildings. As a consequence, the financial condition of most municipalities has improved materially since Pearl Harbor.

"The income of most municipalities is increasing as a result of booming business activity. The real estate tax is usually the bulwark of municipal revenues, so the high level of consumer income is bringing great improvement in tax collections on current accounts. Available figures indicate that only about 6% of current tax collections are now delinquent, compared with over 25% in 1933 and around 9% in 1939. Collections on old delinquencies have also picked up. Furthermore, the upward trend of realty values is facilitating foreclosure sales of delinquent property."

Thus unless something unforeseen develops, a nationwide program for improvement of the fire service should develop shortly after the end of the war.

While many cities will be in a position to carry on this program without outside help, it is possible that federal help may be made available to stimulate public works improvements throughout the country.

Public Works Program Needed

Robert Moses, the very able Park Commissioner of New York City, and one of the best authorities in the country on public works construction, recently reported to the American Institute of Steel Construction as follows: "There is a tendency on the part of big business to assume that if government restrictions are released after the war, private initiative and capital can take care of the postwar employment problem. The sooner industry and others get away from this hokum, the better off we will be. Cuts in government spending, cancellation of war contracts, demobilization of armed men and plant workers, no matter how gradual and humane, are bound to produce the most serious unemployment problem of our history. These problems are not to be laughed off by fine phrases. Neither stainless steel, nor plastics, nor electronics, nor Beardsley Ruml's tax cutting plan, individually or severally, will turn the trick. It requires a combination of all forces, public and private. Industry will need public works for stimulation in the slump period of at least eighteen months following the end of the war."

Whether federal help becomes available or not, cities must plan on fire department improvement programs.

To secure an estimate of the fire department improvements that are in the offing, the writer recently made a survey among fire departments in cities of 5,000 population and over in the United States. The total population represented by cities reporting was 30,612,713, as compared to a total population of all cities in the United States, of 5,000 and over, of 69,404,791. Thus the survey covered nearly one-half of the total population of the group.

In reporting on fire department improvements, some fire chiefs listed the improvements as covering a period of from one to two years, while a few indicated that the improvement program would cover a period of two to three years. Others stated that the program would be carried into effect immediately when materials and labor became available.

In many cases the initiation of the program will be based on the condition that money is available for the purpose.

In the table below, it was necessary to pro-rate the improvements reported by those participating in the survey over the total population of all cities of 5,000 population and over classification.

Thus as 30,612,713 population were included in the answers to the survey and as the total population of cities of 5,000 and over in the country is 69,404,791, it is necessary to multiply the figures secured in the survey by 2.26 (69,404,791 ÷ 30,612,713 gives 2.26). Thus all of the figures given in this survey were multiplied by this amount to attain the estimated demand for apparatus and improvements in all cities of that population group.

What the Survey Showed

Below are given the improvements which are reported by fire chiefs as being planned for postwar inauguration (multiplied by 2.26 for the reason above outlined).

Total number of new fire stations to be erected, 1,151.

Total number of new fire alarm headquarters buildings to be erected, 286.

Total number of new fire department drill towers to be built, 486.

Total number of pumping engines to be purchased, 1,701.

The above total includes 587 pumpers the sizes of which are not given; 112 500-gallon-per-minute pumpers; 565 750-gallon-per-minute pumpers; 302 1,000-gallon pumpers; 7 1,200-gallon pumpers; 14 1,250-gallon; 2 1,500-gallon; and 115 triple combination pumpers.

Total number of aerial trucks, 329.

Junior aerials, 155.

City service trucks, 115.

Quadruple combinations, 83.

Hose wagons, 47.

Crash trucks, 7.

Emergency trucks, 18.

Salvage wagons, 7.

Squad cars, 11.

Supply trucks, 4.

Tank trucks, 7.

Chief cars, 70.

Ambulances, 2.

From the above it will be noted that the total pieces of fire apparatus, including pumpers, ladder trucks, quads and hose wagons, number 2,430.

The total amount of hose anticipated to be purchased after the war is 5,213,000 feet.

The total number of fire hydrants reported as being planned for installation is 50,780.

As noted above, the total population represented by the above survey is 69,404,791, which represents the population of all cities of 5,000 population and over in the United States.

From 1,000 to 5,000 population, incorporated villages and towns only, there is an additional 14,368,590 population, or approximately one-fifth of the total included in this survey.

Therefore an addition should be made to the above figure to take into account the possible purchases in these smaller communities.

While they would not be likely to buy the larger units such as 85 or 100-foot aerial trucks, 1,500 gallon pumpers, etc., nevertheless they represent a very definite market for smaller units such as 750 gallon pumpers and under, city service trucks, etc.

Thus if the correction is made for these smaller communities, each of the figures given in the table above should be increased by one-fifth, such increases, of course, being limited to the types of apparatus commonly employed in the smaller communities.

Miscellaneous Pumper Types

With regard to the table, certain other conditions should be pointed out. For example, where the size of the pumper is not given, the total figure also includes a number of high pressure fog pumpers, brush fire trucks equipped with pumpers and special pumping jobs. Although the total of these special types of units is small compared to the whole figure, nevertheless they represent a very definite part of the survey.

Booster and hose wagons were classed as hose wagons in the above table.

With regard to fire hydrants, many fire chiefs did not report on the number of fire hydrants anticipated for installation due to the fact that this matter is in the hands of the water departments of their cities, and no figures were available. Thus the figures on hydrants is appreciably less than a complete survey among the water works and fire departments together would indicate.

Insofar as the size of hose is concerned, the vast majority reported in the survey was of 2½-inch diameter with but a small amount of 1½-inch, and a negligible amount of 3-inch. In a few cases 1-inch hose was also included.

All in all, the survey, which is believed to be conservative, indicates that there should be a big market for fire department equipment as well as a very extended program of fire department building construction following the war.

Post War Changes

(*Continued from page* 522)

try will be flooded with many a makeshift apparatus being constructed by unexperienced mechanics because there will be a lapse of time before apparatus manufacturing companies can get back into operation and delivery.

I believe the OCD units, 500 GPM pumps possibly, will be available and cities as well as small departments shall have a commercial truck chassis by custom build, from ground up, and use such pumps.

A correct way to purchase fire apparatus is to analyze what you want based on your study, experience and the views of other qualified persons. There are a great many things to be considered in that decision as previously stated. The first undoubtedly is the water supply available, second, pumper capacity and third, the maneuverability. In considering such an important matter, we will probably all be surprised after the war in finding out just what is available and what new developments this war has brought out and until that time we can all do a lot of good thinking.

I will repeat again that I believe our master mechanic and assistant mechanic associated with factory engineers ideas and experiences, will be able to work out a clearer picture of what we actually need at that time.

It has been my experience that a program developed with the good thinking of the municipal fire departments aided by the recommendations of organizations such as I have described, gives the best results in the end.

Southeastern City, Population 144,332: I have several pumpers in service with large closed cabs, and find that this feature tends to reduce illness to some extent, as it provides shelter to men returning from fires, and does not subject them to the weather while they are wet and overheated.

The present mounting of motor and pump is satisfactory; motor should be not less than 185 horsepower, and not less than 750 g.p.m. pump capacity, with suction connections on side.

I would suggest that a partition be included for 1½ inch hose on the side, or 2½ inch hose, with two shelves, and a connection for 1½ inch hose, with a valve on the outside of body, as this design will give the company two 1½ inch hose lines, which will always be connected and ready for use.

Ladder mounted on top of body; booster tank not less than 100 gallon capacity.

Body should be built higher, in order to have apparatus from 88 to 90 inches wide, with hood of engine not so wide, which will not obstruct the sight of the driver.

These suggestions, while some have been carried out in planning apparatus, would all make for more efficient operation of the Fire Division; many other suggestions could be made, but the above constitute the outstanding changes in my opinion.

Pacific Coast City, Population 105,958: I am in favor of open bodies with small cabs because of the climate here. Pump should be mounted midships with motor in front of cab.

Horsepower should be 190 to 240, pump capacity, 1000 gallons per minute. Suction connection should be a left side one with squirrel tail around front. Hose bodies should be divided without aisle. Ladder mounting should be on side. Booster tank capacity should be 200 gallons.

Five Killed in Hotel Fire

Five persons, including three Chico Army Air Field men, were killed when fire swept the fifty-year-old Union Hotel in Oroville, Cal. The fire, which was believed to have been set by a pyromaniac, caused damage estimated at $125,000.

Central Station Fire Protection Association Joins Fire Waste Council

Announcement was made recently by Paul L. Hardesty, chairman of the Executive Committee of the National Fire Waste Council, that the Central Station Fire Protection Association of New York has become a member of the Council. The Council is affiliated with the Chamber of Commerce of the United States and is the advisory body for the National Chamber and its member organizations in fire prevention activities.

Membership in the National Fire Waste Council is determined by the Membership Committee, the recommendations of which are submitted to the Council's complete membership for ratification.

The Central Station Fire Protection Association, which includes the American District Telegraph Company, is the thirty-fourth organization to add its support and facilities to the now more than ever vital work of the Council in promoting the reduction and prevention of fire waste.

OCD Fire Fighting Equipment—

A Report to the Fire Service on Disposal Thereof*

By ROI B. WOOLLEY

As this is written, the fighting in Europe has definitely turned in favor of the United Nations. Odds are that Germany and her satellites will have capitulated before snow falls—possibly even before this is read.

This change in the fortunes of war, and the nation's shift from defense to offense, together with the consequent liquidating of civilian defense forces, focuses attention on the $36,000,000 worth of auxiliary emergency fire fighting equipment purchased and distributed to some 3000 communities by the Office of Civilian Defense.

As long as there was threat of enemy attack on our shores, the 15,000 pumping units and the 2,500,000 pump tank extinguishers loaned out by OCD provided a comforting reserve for the Fire Service, even though many of its more experienced members viewed and accepted the equipment with reservations, if not open skepticism, as to its ability to perform effectively in a serious emergency.

War Use Has First Claim

Now that the threat of danger has passed, these chiefs have been the first to raise the question, what's to become of all this OCD equipment? Where do we stand with regard to it? At the same time, other chiefs who have used it in one way or another—particularly for non-fire service duties—and whose municipalities perhaps have a financial stake in the equipment, through purchase of mounts or tow-cars for it, are asking much the same questions. They want to know where they will be when OCD or some other Federal agency comes to pick up or liquidate this equipment—equipment which was actually only loaned to them but which they in company with others in civil government have come to believe is or will be rightfully, legally theirs, for all time.

There is still another group of chiefs, most of whom never received any allocations from OCD—except for possibly a few helmets and perhaps some pumpcans, who have indicated their desire to get some of it, when, and if they (the pumpers) are available. Naturally, most of these requests come from areas not considered as "targets" in the original allocations.

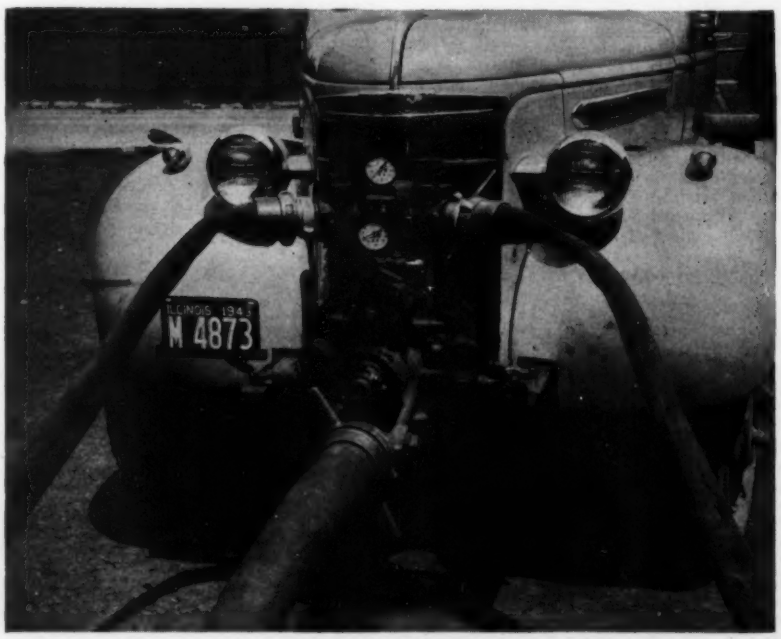
Over all the Fire Service and the Office of Civilian Defense, looms the shadow of the war, and the military, with a capital "M". Both the Army and Navy have made demands upon OCD for considerable quantities of this apparatus and equipment, as was indicated by Col. Edward L. White in his article "The OCD Fire Protection Property Program" in the July issue of FIRE ENGINEERING. Since Colonel White released this article, we are informed that the Army has increased its demand for more pumpers. In Regulations No. 1, Supplementary Order No. 1 dated July 1, 1944, subject: "Policy Relating to Protective Property" we note this paragraph:

"The Armed Services have recently made request upon this office (OCD) for a number of trailer pumpers which is in excess of the total amount of this type of equipment available in OCD reserve plus such trailer pumpers as have been declared excess. In addition, it appears that the Armed Services will need a large number of skid units. Therefore, all excess trailer pumpers uncovered will be made available to the Armed Services. In addition all said units declared to be in excess up to and including June 30, 1944 will probably be transferred to the Armed Services."

It would appear that as American forces continue to advance in Europe and in the Far Eastern Theatre, the demands of the Army and possibly the Navy for this equipment will continue to grow.

This is as it should be. FIRE ENGINEERING has long advocated such use of this emergency equipment. The winning of the war comes above all else, even where it means giving up fire fighting equipment which the Fire Service might desire to retain. Those chiefs who have been skeptical of OCD equipment won't hesitate to agree to this disposition of pumps and appurtenances as the best thing that could happen to the Fire Service. On the other hand, however, this isn't going to solve the problem. Even though the Army took over all the trailers, and large numbers of skid mounts, there would still remain the problem of disposing of the remaining thousands of units—including practically all the front-mounts, with their accessories of single-jacket hose, and tools, etc. made of non-critical materials. And here lies the threat to the Fire Service. For it must be remembered that while experienced fire fighters know the mechanical and other limitations of this emergency equipment which, in the words of Colonel White of OCD "is purely auxiliary in nature" and should not be used if regular equipment is available "because of its probable superior efficiency," the general public knows nothing about its fire fighting assets or liabilities; it knows only what it has learned through the press and radio from accounts which usually were rose-colored for public consumption.

Further, many fire commissioners, trustees and others who shape the destinies of the Fire Service, can recognize



OCD Front Mount Pump on Dual Installation, Chicago Fire Department. Survey Indicates Fire Service Would Release 55 Per Cent of Allocated Front Mounts.

*The complete report of which this is an abbreviation will be presented before the 71st Annual Conference of the I.A.F.C.

no difference between this emergency auxiliary equipment and "standard" apparatus and appliances. This belief, unfortunately, has already been demonstrated in some communities where local authorities have countered the fire chiefs' requests for additional apparatus with the statement that "you can get along very nicely, using your OCD equipment."

OCD Units Not from Fire Apparatus Industry

This publication holds no brief for the fire apparatus industry of America. Nevertheless, it must be said in all fairness that that industry had no hand in and received no money from the manufacture of OCD pumping units, yet the dumping of this emergency equipment on the market as "surplus" or under any other classification could not help but seriously threaten the very foundation of that industry and, coincidently, the standards of efficiency upon which the Fire Service has been built. This in turn would jeapordize the entire fire fighting program of the nation.

Recognizing this situation and fully aware of the uncertainty and confusion that exists generally over the immediate and final use and disposal of this OCD equipment, the International Association of Fire Chiefs has taken the lead in an effort to reach a satisfactory solution of the program.

Early in its study of the situation several things became apparent. The first was the fact that the Office of Civilian Defense can make no post-war plans for final disposal of any OCD apparatus. As Colonel White pointed out in his message of July, the legislation under which of the Office operates only allows the distribution of the material in one manner, and that is by loan to political subdivisions. At present, according to the Colonel, the OCD cannot authoritatively consider any of the various suggestions that have already been made for disposing of this equipment. It is going to take legislation to decide this issue.

Next, it was apparent that if a satisfactory solution of the problem was to be obtained, it would require the cooperative action of all elements of the Fire Service—paid, part-paid, volunteer and auxiliary members, working in concert. This was—and is a task for the entire Fire Service because the problem is that of the entire Fire Service, not merely a part of it.

Interests Must Work Together

It was likewise evident that before the Fire Service could act in concert, it must have something upon which to base its actions. Furthermore, it is be presumed that the Federal Government has no desire to see hardships inflicted upon the Fire Service in connection with the disposal of "surplus" war emergency fire apparatus and equipment any more than it has to see other industries or professions so injured or handicapped. The Surplus War Products Administration, the agency through which it is reported OCD equipment will be finally channeled, was created for the purpose of making the best possible disposition of such "surpluses" and it is to be assumed that it, or any other Federal agency charged with writing "Finis" to this OCD material, will be similarly sympathetic. However, if the Fire Service, per se in all its ramifications canot itself agree on a plan or program to solve this problem, it will be manifestly difficult for the Government to act in the best interests of the Fire Service.

In the light of this logic, the International Association of Fire Chiefs brought about an impromptu and 'unofficial' meeting of representatives of the foremost national Fire Service organizations and others closely allied with it. This meeting was held during the conference of the National Fire Protection Association in Philadelphia last Spring. There were present, Mr. George Booth, National Board of Fire Underwriters, Mr. Fred Shepperd and Chief Roi Woolley, International Association of Fire Chiefs, Mr. George Richardson, Secretary-Treasurer International Fire Fighters Association, Mr. Warren Kimball, National Fire Protection Association, Mr. H. M. Pontius, Chairman Joint Committee on Post-War Rural Fire Protection, National Fire Waste Council and Colonel Edward L. White, Chief Protective Property Division, U. S. Office of Civilian Defense.

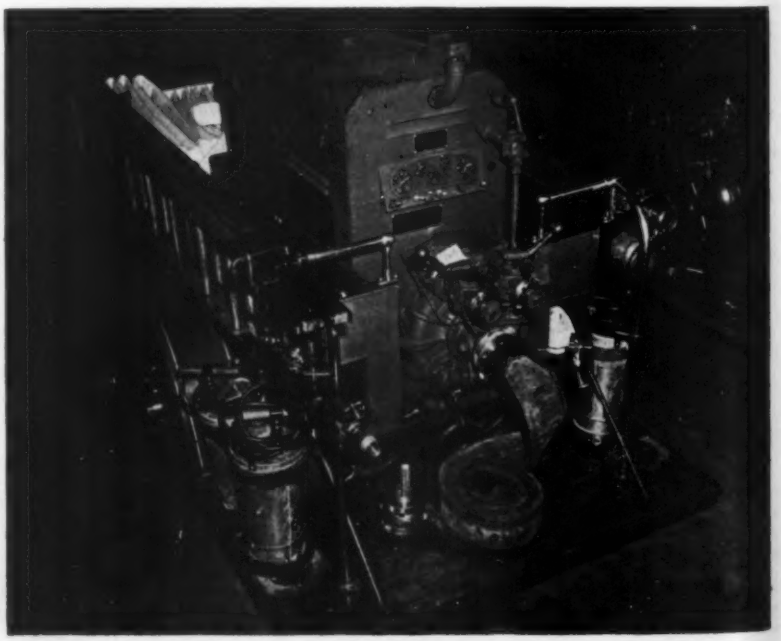
It is interesting to note that two members of this group, Mr. George Booth and Mr. George Richardson, were members of the original Fire Defense Advisory Committee, which had to do with shaping the initial OCD fire apparatus program.

Program of Action

Following lengthy discussions of more important aspects of the problem by all of those present it was finally agreed that the first step in reaching a solution must be the formation of a committee or other body which could (1) reduce the problem to fundamentals (2) secure all the necessary facts upon which to base recommendations (3) prepare a plan of action and the recommendations and (4) secure the endorsement and support of the programs by the groups represented by members of the committee, or planning body.

By unanimous agreement it was decided to create such a committee, the neucleus of which would consist of those present. Mr. George Booth was appointed Chairman and Chief Roi Woolley Secretary. The members were asked to inform their own organizations of the action taken, and to assist in gathering the essential factual data. It was understood that the Office of Civilian Defense was conducting surveys to determine the status of its equipment in the field and it was believed advisable to supplement its efforts with all possible impartial, first-hand information secured direct from the Fire Service. This task was given Mr. Shepperd and Mr. Kimball, the former, through the International Association of Fire Chiefs to survey municipalities of 10,000 and over, the latter, through the national Fire Protection Association, to secure data from smaller communities and rural areas.

At about this time, the Director of Civilian Defense in Washington "froze" all OCD equipment in its existing locations, pending further action by the Bureau of the Budget. As of June 30, 1944, the nine Regional Offices of the OCD were discontinued and other drastic curtailments in civilian protection ordered from Washington. As a result of these reductions, the field staff of the national OCD was practically wiped out. In addition, certain OCD warehouses were eliminated. The situation was further confused by the numerous and rapid changes in state and local civilian protection "directors" and "property officers" which made it increasingly difficult for fire chiefs entrusted with or responsible for maintenance and operation of allocated OCD fire fighting equipment. Added complications also arose from the efforts of certain communities and states



OCD Skid Mount Pump Installed on Old Hose Wagon of Chicago Fire Department. About 53 Per Cent of Skid Mounts Are Reported Available for Reallocation.

Dual Installation of Front Mount and Skid Mount OCD Pumps on Chicago Park District Trucks. Many Communities That Have Invested in Such Installations Desire to Retain Them.

to secure permanent title to OCD materiel, acting independently of local or national Fire Service organizations.

These were the conditions soon after the Committee held its first meeting. Meanwhile the Army was increasing its demands upon OCD for more pumping units and the latter agency was scraping the bottom of the barrel to find them without having to make demands upon municipalities for them.

Rural Demands Limited

At a June meeting of the Committee, preliminary results of the surveys were presented which indicated that there was plenty of apparatus available to the military (or any other Government agency). At the same time it became evident that the hope of having rural areas absorb the balance of units not taken by the Army was too optimistic. According to estimates submitted by Mr. Kimball, based upon contacts with State Fire Marshals, Coordinators, and Government agencies, at best it might be possible to utilize about 3000 to 3500 pumping units to protect rural areas (where no organized fire forces exist). On the other hand, one Government agricultural authority reported that rural areas could not be counted upon to encourage or support fire departments.

After weighing this preliminary evidence, the Committee concluded that—

1. No specific recommendations should be made to Congress, OCD or any other body at this time.

2. The Fire Service should make it known at once that if the Army or Navy want OCD units now located but not wanted in municipalities they should be given them.

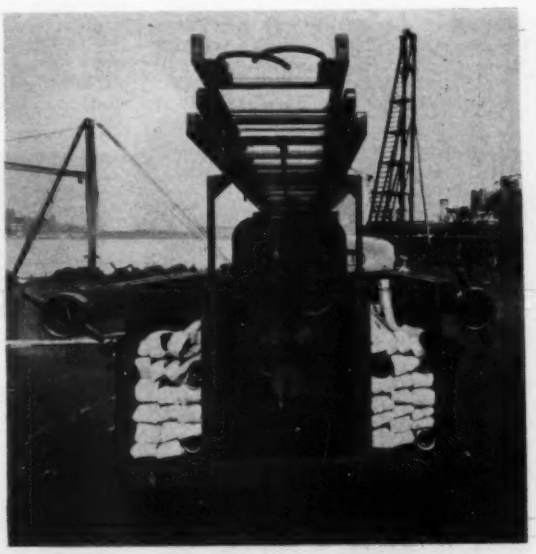
3. Consideration must be given communities that have invested money to provide mounts, tow cars or for any other purpose in order to make OCD equipment mobile and operable and whatever final recommendations are made, these places should be permitted to retain such mounted equipment.

In July, results of the International's survey were sufficiently comprehensive to give a cross-section of conditions as they exist throughout the nation, and to enable the Committee to draw definite conclusions for incorporation in its final recommendations and which it will submit, through the organizations represented by the committee to the proper authorities in Washington. The high points of that survey are given on these pages. The conclusions reached by the Committee are as follows—

1. The war has yet to be won. It is not the intention of the Fire Service to recommend any steps or action that would in any way jeopardize the successful conclusions of that war. However, the nation has switched from defense to offense and it may be advisable to readjust and reshape the plans for the use of OCD firefighting equipment accordingly,—giving to the military, equipment that can better be used abroad, or through military channels, than by communities which received it only as a defense measure and most of which, as shown by the survey, they do not want and would like to surrender.

2. Thousands of OCD units are now available for use by the Army and Navy.

(*Continued on page* 588)



OCD Trailer of Baltimore Fire Department with Overhead Ladders. This Type of Unit Is in Greatest Demand by the Armed Forces.

Over Half of Allocated OCD Pumping Units Immediately Available to Military!

Survey of International Association of Fire Chiefs Discloses the Fire Service Would Release over 54 Per Cent of OCD Pumping Units now on Hand.

The following is taken from a survey among communities of 10,000 population and over, just completed by the International Association of Fire Chiefs to determine the use and disposal of OCD fire fighting apparatus and equipment:

States covered by survey..... (Wherein are located most of the OCD allocated apparatus)	29
Communities answering questionnaire and having OCD equipment	450
No. of OCD pumps in communities reporting (all types).....	4511
Trailer	2269
Skid mount	1500
Front mount	742
No. of OCD pumps mounted by communities reporting ..... (all types)	1622
Skid mount	1246
Front mount	376
No. of communities that would turn in ALL of their OCD pumps	205
No. of communities that would turn in PART of their OCD pumps	175
No. of communities reporting that they would turn in ALL or PART of their OCD pumps (Or 84.5 per cent of total reporting)	380
No. reporting they would NOT return in ANY of their OCD pumps ..... (Or 12.7 per cent of the total reporting)	57
Total of pumps that would be returned by communities reporting (all types)	2395
Trailer	1263
Skid mount	725
Front mount	407

Total no. and per cent of OCD pumps that would be returned from all sources based on total distribution by OCD of 15,000 pumps divided as follows: Trailer — 7,500; skid mount — 5,000; front mount—2,500, using ratios based upon foregoing totals:

Trailer — 4,170, or 55.6% of total national distribution.

Skid mount — 2,650, or 53% of total national distribution.

Front mount—1375, or 55% of total national distribution.

Grand total of OCD pumping units that could be released—8,195, or 54.5% of total national distribution of 15,000 units.

Chemistry in Fire Fighting

An Outline of the Relationships Which Exist Between the Science of Chemistry and the Fire Fighting Profession

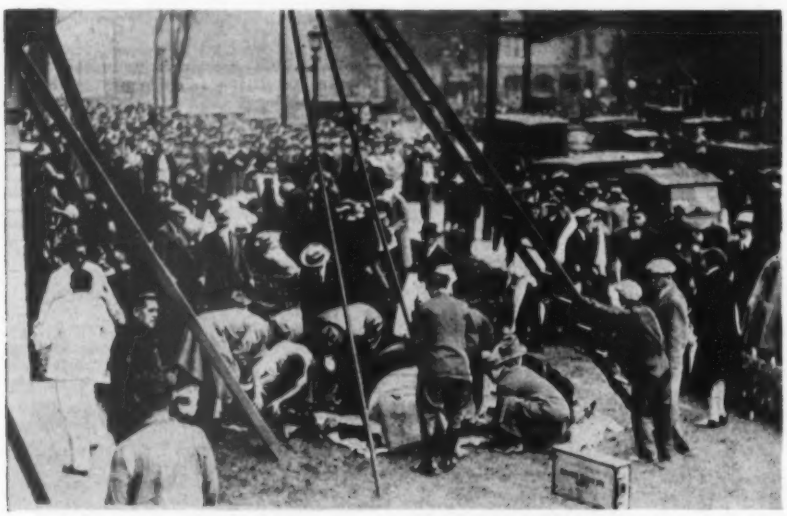
By GUSTAVE E. BONADIO, B.S.

BEFORE the turn of the present century, an attempt to link the job of extinguishing fires to any of the recognized sciences would have been greeted with ridicule. John Joe, citizen, conceded the task of the fireman to be no sinecure; it was fraught with danger and the likelihood of sudden death. You might say it was classed as a difficult but necessary chore. Fire fighters, themselves, would have been among the first to scoff at any effort to dignify their occupation by a subtle relationship to one or more of the four-syllable "ologies."

A fireman's job, a retired elderly chief from a neighboring metropolis once told me, was primarily to get in there and put the fire out. He raised the point, however, that the more knowledge a fireman acquires, particularly in such fields as chemistry, physiology, etc., the less likely he is to crawl down some smoke-filled cellar, where the materials stored are of dangerous or questionable composition. "Why," he explained, "if men were to be drilled and instructed in the make-up of stuff they're likely to find in an ordinary department store, you'd have nothing but a crew of kink-chasers and a nozzle that would go begging for a pipe-man!"

Fortunately, this was not a statement of fact, but mere opinion. The startling innovations brought about during the past few decades have proved this. Firemen have not gone pedantic, as some cynics sarcastically infer, but they have advanced in one very important respect, and that is in the matter of curiosity—the desire to know how and why, when and where.

It will not be argued here that a scholarly grasp of such sciences as mathematics, physics and chemistry are indispensables for a first-grade fireman. There have been and still are plenty of outstanding "smoke-eaters" to whom these mystic words mean little more than required subjects for their youngsters in high school. Nevertheless, a working comprehension of such fundamentals is necessary, for when engaged in emergency work, it simplifies the task of arriving at important decisions. As a matter of fact, whether they realize it or not, all successful firemen do possess such knowledge, the only difference being that some have acquired it in theory and later expanded it by practical application to fire duty, while others have scraped it together wholly from actual experience. It cannot be denied that an understanding of those principles which are fundamental to the fire profession are essential to an officer who takes pride in his rank and certainly, for the ambitious fireman, they are quite definitely a prerequisite for promotion.



Fumes from Decomposing Pyroxylin Photographic Film, at Small Fire in Cleveland Clinic (Hospital) on May 15, 1929, Took the Lives of 125 Inmates, Attendants, Firemen and Police.

Theory of Combustion Easily Explained

The explanation of what happens when a substance ignites and burns can be made into a complicated discussion. Fundamentally, however, the phenomenon is easily made clear, without technical detail. Three factors are necessary before fire can occur; first, a combustible substance; second, a sufficient quantity of heat; and third, sufficient oxygen in the surrounding air. It follows, therefore, that if any one of these conditions were absent, combustion could not occur. The reason that water is such an excellent extinguishing agent is obvious. It removes two of the conditions necessary for combustion. It cools the substance below the ignition point and excludes the required oxygen.

Although it may seem paradoxical, it is nevertheless true, that common solids and liquids themselves do not burn. It is the vapors given off by these solids and liquids, when sufficiently heated in air, which really burn. A simple experiment will prove this. If a candle which has been burning for a few sec-

Smoke Produced by Incomplete Combustion when Tank of Light Oil Burned.

*Member New York City Fire Department.

onds is blown out and immediately thereafter a burning match is held about one-half inch away, the wick will burst into flame again. This demonstrates the existence of a vapor, for the propagation of flame from match to wick would be impossible otherwise.

Most substances which are capable of burning are composed for the most part of carbon. When these substances become sufficiently heated, the carbon unites with oxygen in the air and a vapor, carbon monoxide, is formed. This chemical action takes place comparatively slowly and is invisible, but once the vapors are given off, and providing the temperature is maintained, the carbon monoxide unites with more oxygen to form carbon dioxide. This latter union of carbon monoxide with more oxygen to form the gas carbon dioxide is very rapid. The rapidity is so great and the degree of heat, so high, that light in the form of flame is given off. The chemical action is now visible to the naked eye. We gaze upon it and say that a fire is taking place.

This is combustion. The cycle is simple. Heat is applied to a substance, thus vaporizing it. This vaporized substance unites with oxygen to form heat and more vapor. The vapor burns, giving off heat (and light) which in turn causes the original substance to further vaporize and unite with still more oxygen, and so on, until the substance is completely consumed.

Oxidation, which is merely the chemical union of a substance with oxygen, does not always result in fire. Slow oxidation, taking place over a period of time is exemplified in the rusting of iron, the discoloration of brass poles and fittings, the brownish tint assumed by a half-eaten apple, and so on. Combustion is a different matter. It is rapid oxidation. And fire is combustion in which the heat of chemical action has risen to the point of incandescence. The minimum temperature required to initiate actual self-sustaining combustion in a substance is known as the "ignition point" or "ignition temperature."

Barrels of Camphor, Sassafras, Saffrol and Eucalyptus, Involved in this Chemical Plant Fire in New Jersey, Resulted in Explosions and Spread of Fire, Levelling the Establishment.

Many mysterious fires are attributed to chemicals. Actually, there is no mystery at all. Some chemicals when mixed with others will react, giving off sufficient heat to ignite any combustible material which may be near. Other chemicals contain within them enough oxygen so that once chemical action is started they can support combustion even in an atmosphere devoid of oxygen.

Spontaneous Ignition

When a material becomes heated, due either to chemical action within the substance itself or between the substance and the supporter of combustion, the process is referred to as "spontaneous heating" and if the ignition temperature of the material is reached, thereby causing it to ignite, the occurrence is termed "spontaneous ignition."

There are many examples of spontaneous ignition in everyday life. Thus, when some isolated piece of oily cotton waste ignites without help from any external source, we have an almost perfect illustration of such an occurrence. The oily cotton oxidizes; that is, the oil in the cotton combines with the oxygen of the air and as it does so, heat is given off. If the cotton is located in a warm, poorly-ventilated place, such as a household closet, such heat is not readily dissipated, and after a time, it may reach the ignition temperature of the materials which then burst into flame. Extension of this fire is then inevitable if a quantity of other combustibles is stored nearby, or if the flooring and other construction features are of wood.

Creation of Smoke

It has already been stated that the great majority of combustible substances are composed mainly of carbon. When heated sufficiently, they give off vapors. These vapors represent, so to speak, the first phase of combustion. If the heating were to continue, actual combustion would take place. But, as is frequently the case, the heat is short of ignition temperature, and actual combustion cannot occur. In such a case, the vapors of gases escaping, carry off thousands of minute carbon particles from the original substance. We call this "smoke."

Smoke is also produced when the oxygen supply in the surrounding air has become exhausted, or when it is not sufficient to support the chemical action to the point of combustion. In such cases the statement is usually made that, "the amount of oxygen is not sufficient to support combustion," and the smoke itself is referred to as "the product of incomplete combustion." One product of the burning of most combustible materials in insufficient oxygen is carbon monoxide—the bane of a fireman's existence. One percent of this gas in a room will cause death in a few minutes.

When substances react chemically, heat is either produced or absorbed. Those chemical reactions in which heat

When 6,000 Gallons of Cleaning Fluid Became Ignited at the Pacific Chemical Company Plant, at Los Angeles, Cal., Two Years Ago, It Developed into the Fire Shown Above.

Three Die in Chemical Plant Fire in Cleveland

Three employees died, and a score more were injured in this blaze that followed a series of explosions at the Warren Refining Company plant in Cleveland, Ohio. Firemen play water on the blaze at its height.

is given off are known as "exothermic reactions" while those in which heat is absorbed are called "endothermic reactions."

Exothermic reactions are of interest to firemen because they are reactions which cause many fires. Two or more chemicals combine and if sufficient heat is given off to reach the ignition point of surrounding material, a fire is inevitable. Endothermic reactions are important because they provide definite information concerning fire extinguishment. If chemical substances can be made to react endothermically in the presence of fire, and if, as a result of such a reaction, enough heat is absorbed from the surrounding medium to bring the temperature down below the ignition point of the substances involved, then it must necessarily follow that the fire will become extinguished. This point is of definite value in fire-fighting and we shall illustrate its use later.

Perhaps by this time, you are wondering how this information can be specifically of use to you. Well, let us investigate a few practical applications. Fire extinguishers embody fine illustrations of chemical principles practically applied. The carbon dioxide extinguisher is one of the simpler cases, so we shall discuss it first.

Chemical Reactions of Extinguishers

Carbon dioxide is stored in cylinders under heavy pressure. Under these conditions, the gas exists in liquid form. When the proper valve on a cylinder of this gas is opened, the pressure is released and carbon dioxide is discharged from the cone of the extinguisher in the form of a white cloud of gas which includes some solid carbon dioxide in the form of "snow." In contact with substances which are on fire, all carbon dioxide, whether it be in solid form or otherwise, will eventually change to a gas. This action is not chemical, in that it involves only physical changes in the properties of carbon dioxide. The action, however, is endothermic; that is, the carbon dioxide in changing from one form to the other absorbs heat from its surroundings. Thus, a fire would be extinguished not only because of the blanketing effect of the carbon dioxide and the consequent exclusion of air, but also because the substances which are burning would be cooled below their ignition point.

Let us depict this action as a chemist would. Since carbon dioxide is composed of one atom of carbon (symbol "C") to two atoms of oxygen (symbol "O_2"), the chemist would represent the gas by the symbols CO_2. The symbol, for heat in chemistry is represented by a triangle and chemical reactions by a horizontal arrow. Vertical arrows, pointing down or up, may be used, and if used, represent solids and gases respectively. Thus the action that occurs when a carbon dioxide extinguisher is used may now be represented by the following chemical equation.

$CO_2\downarrow$	+	$\triangle$	$\Longrightarrow$	$CO_2\uparrow$
Carbon Dioxide Solid	Plus	Heat	Yields	Carbon Dioxide Gas

In like manner, we can study the chemical action of the carbon tetrachloride extinguisher. This extinguisher contains a liquid and is operated by hand pumping action. Liquid carbon tetrachloride in contact with hot metals changes to a gas and at the same time absorbs oxygen from the air. In the chemical action that ensues, some phosgene and chlorine gas are given off. The chemical action could be represented in the following manner.

$2OCl_2\uparrow$	+	O_2	$\Longrightarrow$	$2COCl_2$	+	$2Cl_2$
2 Parts Carbon Tetrachloride		1 Part Oxygen		2 Parts Phosgene Gas		2 Parts Chlorine Gas

Phosgene gas is deadly but fortunately the amount given off is very small. This is not an argument against carbon tetrachloride extinguishers. The hazard is great only in confined spaces and where the concentrations of phosgene gas are relatively high. In such cases, the answer quite obviously is adequate ventilation.

A third type of extinguisher commonly used in fire departments and elsewhere, is the soda-acid type. In this extinguisher, a bottle of sulphuric acid is suspended over a solution of bicarbonate of soda. Turning a valve, or inverting the extinguisher permits the sulphuric acid to mix with the bicarbonate solution. The chemical action which follows releases carbon dioxide gas under such pressure that the contents of the extinguisher are immediately discharged. The equation below depicts the chemical action.

A discussion of chemical extinguishers would be far from complete if some mention were not made of the foam type extinguishers. Two different solutions are employed in this extinguisher. Some manufacturers call them "Solution A" and "Solution B"; but for all the difference it makes, they could be called "X" and "Y." The point is, they are aqueous solutions of two different chemicals. These two substances are received at the fire house in powder form, the water being added at the time the extinguisher is recharged. One of these substances is sodium bicarbonate, the other is aluminum sulphate. This extinguisher, like the soda-acid, is operated by inverting the extinguisher or by turning a valve. In either case, the action permits the two solutions to mix and the chemical activity shown below takes place.

$2NaHCO_3$	+	H_2SO_4	$\Longrightarrow$	Na_2SO_4	+	$2H_2O$	+	$2CO_2$
Sodium Bicarbonate		Sulphuric Acid		Sodium Sulphate		Water		Carbon Dioxide Gas.

Chemical Action of Soda Acid Extinguisher

An explanation would perhaps be appropriate at this point. Unless you are acquainted with chemistry, you are probably wondering why we have some licorice riding about on the arrow. Well, this is merely a means of portraying that the licorice, although present during the chemical action, does not, strictly speaking, enter into the action itself. The licorice powder, which is an extract of licorice root, is usually mixed by the manufacturer with the bicarbonate of soda powder. The function of the licorice-root extract is to impart a consistency to the resulting foam bubbles and to trap the carbon dioxide gas given off by the chemical action depicted above. Not all manufacturers use licorice-root extract. Some use albumin,

$6NaHCO_3$	+	$Al_2(SO_4)_3$	Licorice $\Longrightarrow$	$6CO_2$	+	$3NA_2SO_4$	+	$2Al(OH)_3$
Sodium Bicarbonate		Aluminum Sulphate		Carbon Dioxide Gas		Sodium Sulphate		Aluminum Hydroxide

(Continued on page 586)

A Picture of Postwar Communications Programs

The Fire Service Will Spend Millions of Dollars for Necessary Post-War Communications*

IN an effort to determine the extent to which the Fire Service is preparing plans and programs for post-war construction and purchasing, the International Association of Fire Chiefs has just completed a survey among cities of five thousand population and over.

The Chiefs of Fire Departments in these communities were asked to list certain improvements that might be made in their cities "assuming that money can be made available."

This list included two items bearing upon fire service communications:

1. New fire alarm headquarters.
2. What new fire alarm apparatus, boxes and circuits might be added.

In answer to question number one, 142 cities reported they contemplated, or intended to erect a new fire alarm headquarters. Fifteen additional cities stated the headquarters would be provided for in a new fire station or other Departmental structure. A further eleven cities signified their intention of remodeling their present fire alarm building.

This is a total of 168 municipalities which contemplate construction of a new fire alarm headquarters, or rebuilding present facilities.

It is difficult to estimate the amount of money involved in this building program. A number of Chiefs reported appropriations for such construction (independent of costs of new equipment or complete fire alarm telegraph or radio systems) running all the way from $5,000 to over half a million dollars. Conservative estimates would place the proposed building and repair program for this "nerve center" of the Fire Service at from $2,500,000 to $5,000,000, exclusive of fire alarm signal equipment.

Among the comments bearing on this question made by reporting chiefs the following are pertinent:

"We plan to abandon two stations and construct a new headquarters building to house our fire alarm headquarters

"Will build a small fire-proof building

"We will either improve present structure or build a new one.

"Our new fire alarm hearquarters will be included in a new Department Shop and Storage Building adjacent to present building.

"The new fire alarm headquarters has long been recommended by the National Board of Fire Underwriters

"This improvement has been repeatedly recommended by the National Board of Fire Underwriters

A number of respondents reported that they had no "fire alarm telegraph" as they depended solely on the telephone for fire communications. Some of these expressed a wish for modern systems.

The chief of one city said: *"Send us all dope on the subject. We have the money and are in a position to buy."* Another indicated the city would purchase office equipment for its new headquarters building. One city set the price of its new fire alarm headquarters at $350,000 exclusive of apparatus, etc.; another on the Pacific Coast will report it will spend $750,000 on its Fire Alarm System, including construction.

Extensive Fire Alarm Additions Included in Programs

Answers to No. 2 question: "What new fire alarm apparatus, boxes and circuits might be added" were even more illuminating:

FIRE ALARM SYSTEMS

Number of complete new systems desired, 118.

Number that will "change over" present systems, 6.

Number that will "extend" present systems, 6.

Number that will improve (modernize) systems, 12.

Number that will "rebuild" present systems, 6.

Number that will "overhaul" present systems, 5.

Total number that will install complete new systems or mprove systems 153

FIRE ALARM BOXES

Number of cities that will install, replace or rebuild boxes, 289.

Total number of boxes to be installed, 14,489.

Number that will install "some" boxes, 30.

Number that will "rebuild" boxes, 2.

Number that reported they would install "many" boxes, 2.

Number that will make yearly "replacements," 2.

Number that will install new boxes on yearly schedule, 2.

Number that will "relocate" boxes, 1 (50).

Number of boxes to replace "old" boxes, 2,900.
(Includes 2016 for one city)

Number that will replace "all" old boxes, 4.

Number that will replace "some" old boxes, 4.

CIRCUITS

Number of new circuits to be added, 405.

Number of cities that will install "new" circuits or additional circuits, 118."

Number that will install new circuits, extend or rebuild old ones, 129.

Number that will add "some" circuits, 19.

Number that will "extend" circuits, 7.

Number that will "rebuild" circuits, 4.

Number that will "re-wire" circuits, 5.

RADIO

Number that will install radio communication systems, 8.

Number (of above) that specify 2-way, 2.

Number that will install "loud speaker" units, 4.

Number that specified "radio transmitter," 1.

WIRE—CABLE

Total amount of wire and cable to be ordered, 808,440 feet.

Feet of wire specified 674,120 (26,400 specified as "copper")

Feet of cable specified 134,320.

Number that specified "some" wire or cable, 2.

Number that will install "all new" cable, 1.

Number that will install "new underground," 1.

Number that will change from overhead to underground, 2.

Number that will install "much" wire and cable, 1.

Note: One respondent will install "considerable cable" to hook up adjoining communities in a mutual aid arrangement. Footage not specified.

EQUIPMENT SPECIFIED AS WANTED

Switchboards (Telephone), 3.
Rectifiers, 1.
Charging Board, 1.
Repeaters, 4.
Transmitter, 11 (also 1 radio transmitter).
Air horn, 5.
Whistle, 1 (Re-locate whistle 1).
Compressor, 1.
Siren—coded, 3.
New Board (panel board, etc.), 15. (1 for 30 circuits).
Registers, 4.
Batteries, 1 (100 units).
"Repairs", 1.
"Rewiring", 2.
"Headquarters apparatus", 6.
"Redistribution of wires", 3 (1 to cover entire city).
"Cells", 1.
"New equipment", 1.

A Word of Warning

Encouraging as are the results of this study, the fact remains that too many municipalities are unprepared with intelligent post-war programs for improving their fire service. This is particularly true of fire alarm communications. Indications are, furthermore, that the end of hostilities will catch many of these cities and towns still without any comprehensive plans or recommendations.

Now is the time for fire chiefs to go into "executive session" with their heads of communications to develop programs of communications improvements that will be in line with other fire service "streamlining." As a further thought—don't overlook radio!

*Other phases of this survey are covered in Mr. Shepperd's companion article "What Improvements Are Ahead for the Fire Service?" published elsewhere in this issue. Note: If it is desired to prorate these improvements to cover all municipalities of 5000 and over, instead of only those cities and towns reporting, multiply the totals given by 2.26 as is done in the above mentioned article.

Complex Fire Problems Handled By County-Wide Department

Los Angeles County Fire Fighting Organization Develops Apparatus to Cope with Unusual Conditions

By BOB GREENOCK

ONE of the most complex problems ever faced by fire prevention and protection forces is that offered by Los Angeles County where there are so many Hollywoodish angles that one might think some movie moguls got together, decided to put on a stupendous,

Spence D. Turner, Forester and Fire Warden, County of Los Angeles

colossal, gigantic production to end all productions.

But it was Nature that laid out the set. There is no pre-determined plot but there are certain given situations waiting to develop. Just how they develop and whether there is a happy ending is entirely up to the principal actors and stars of the cast, the firemen and fire fighting officials.

As Joseph J. Davis, chief assistant to County Forester and Fire Warden Spence D. Turner, points out, Los Angeles County is located in a semi-arid region with long periods of extremely low humidity; readings of six per cent are not uncommon; there are frequent high velocity winds and a three months' rainy season with rains usually of torrential nature.

On the other hand, while the county has sixty per cent of the State's population and about seventy per cent of its wealth, its local water resources are only one per cent. The area of the county is 4083.21 square miles, of which 728.045 square miles comprise the total area of forty-five cities including Los Angeles. The national forest area in the county is 1072.21 square miles, leaving a total of 2282.955 miles under the juridiction of the Los Angeles County Fire Department.

Of the 2282.955 square miles, 175.93 constitute the thirty-three County Fire Protection Districts formed and operated under State law. The protection districts do suppression work in the urban and industrial areas. The remaining 2107.025 square miles, of which 578.86 are cultivated or farm areas and 1528.165 mountainous and watershed areas, are protected by the Field Divisions.

The field divisions of the Los Angeles County Fire Department are maintained through the County general fund and the protection districts for the unincorporated county areas by taxes but they function as one unit.

Climate and Vegetation Troublesome

To get back to the geographical features of the county, not only has Nature conspired from a climatic standpoint to produce a highly flammable type of vegetation but she has complicated the problem of fire prevention and protection with mountain slopes that rise precipitously from valley floors to elevations of 7,000 to 10,000 feet. After every watershed fire the danger from flood is extremely grave which accounts for the extensive development of flood control systems.

Man has conspired, though, to offset this hazard created by Nature through the finest kind of cooperation between the U. S. Forest Service and the County Fire Department. Says Chief Davis:

"Probably nowhere in the West are jurisdictional boundary lines so peculiarly interlaced. The Angeles National Forest is situated in the San Gabriel Mountains which traverse the county in an easterly-westerly direction, lying to the north of the large San Fernando, Los Angeles and San Gabriel Valleys in which is the major part of the population of the County. Between the southern line of the forest and the floor of the valleys is a buffer strip under the jurisdiction of the County Department, in which any fire threatens National Forest territory. Intensive protection along this south boundary of the forest is given by both services, the present plan including five to eight minute response as against a 15 minute response for all other areas with the exception of the very high elevations or more remote regions in which a greater period of time is acceptable."

Four Field Divisions Created

In the prosecution of mountain fire suppression, four field divisions have been created for administrative purposes.

Falling within their jurisdiction are both incorporated and National Forest areas as well as the other areas which fall naturally within their scope.

Cooperative agreements have been entered into between the County and the U.S. Forest Service covering the Angeles National Forest, the greater portion of which is in Los Angeles County with some four square miles lying in San Bernardino County, and the San Bernardino National Forest which is adjacent to Los Angeles County on the east and Los Padres National Forest lying to the west on the County line, with a small area within Los Angeles County.

There are also cooperative agreements with Ventura County, with the State Division of Forestry covering Kern, Orange and San Bernardino counties and with certain cities within whose corporate limits mountain areas lie.

The physical structure of each Field Division is substantially the same. Each has a headquarters from which the division's business is administered and each has a number of patrol stations, the number of which depends on fire protection requirements.

A fire warden, grade V, supervises Field Division activities, acting as would an assistant chief in a fire department. Each division is under direct supervision of a fire warden, grade IV, corresponding to a battalion chief. Each Battalion chief has a fire warden, grade III, as an assistant. In charge of stations having heavy pumping equipment are fire wardens of grade II and in charge of stations with light pumping equipment are fire wardens of grade I.

Attached to the Field Divisions are four wardens of grade IV, four of grade III, twelve of grade II and ten of grade I. In addition there are 39 apparatus engineers, 90 forest firemen, 13 observers attached to the four divisions. Each division further has a senior fire dispatcher and assistant dispatchers.

Distribution of Equipment

Equipment is distributed as follows:

Each division headquarters has two pieces of heavy pumping equipment and as many light pieces (patrol cars) as are necessary.

Twelve patrol stations have one heavy pumper and one patrol car each and ten stations are equipped with patrol cars, one or more to a station.

Field Division fire equipment originally consisted of freight trucks used to carry men and tools. About 1927, 600-gallon water tanks were installed on large freight trucks. In 1929, Chief Davis designed a new type of apparatus using tanks varying in capacity from 250 to 600 gallons. The 600-gallon tank type has become standard equipment

although a few of the 250-gallon type are still in service. Says Chief Davis:

"Although additional water would be most welcome, the limit of weight has been reached by the most recent acquisitions. These average around 24,000 pounds and represent the limit that, with safety, can be put on the narrow fire motorways we have constructed at strategic locations."

Most of the new standardized equipment has been bought from the Seagrave and Mack companies. These rigs have 600 gpm pumps, a 600-gallon water tank, can carry 1600 feet of 1½-inch double-jacketed and 600 feet of 1-inch single-jacketed hose and have an auxiliary 75-gallon-per-minute pump which can be used in connection with the water tank while the apparatus is in motion.

Each Field Division officer and patrolman is provided with either a one-half ton or one ton pickup patrol car. The one-half ton job carries 70 gallons of water, 200 feet of 1-inch cotton-jacketed hose, a 38-gpm Viking pump and other necessary fire equipment. The one ton trucks carry 140 gallons of water, 75-gpm Oberdorfer pump and a slightly larger complement of hose.

Tanks have been installed throughout the mountains to supply water for the tank trucks. These tanks run from two to ten thousand gallons in capacity.

One catchment reservoir, built several years ago, has a 350,000 gallon capacity with some four or five miles of six and four inch mains leading from it. While considerable expense was involved, it has proved an ideal means of water supply for an area having a large number of structures. Other catchment type reservoirs are being constructed, each averaging 10,000 gallons.

Many Lookout Towers Maintained

The Field Division operates eleven lookout towers correlated to fifteen U. S. Forestry Service towers and two maintained by the city of Los Angeles. All are considered primary towers, have been placed as a result of a Statewide survey by the various fire protection agencies in cooperation with the California Forest and Range Experiment Station. The Los Angeles County Fire Department and the U. S. Forest Service co-operate with the U. S. Weather Bureau and the California Forest and Range Experiment Station, using the Statewide fire danger rating system maintained by them.

In its mountain fire suppression and prevention work, the L. A. C. F. D. has found it necessary to construct firebreaks, fire motorways, trails and an elaborate telephone and teletype system. The Malibu Division has been completely radio-equipped and the WPB has approved plans to so equip the Arroyo Seco Division. Eventually, the war permitting, the Soledad Division will also get radio equipment.

In the non-mountainous, unincorporated areas, structural protection is supplied by the 33 County Fire Protection Districts already mentioned. The Fire Protection District Division is, like the Field Division, in charge of an assistant to Chief Turner. This division is divided into three battalions, each in charge of a battalion chief. There are 295 men in this division. They and the apparatus used are quartered in firehouses located in 28 of the districts. There are one or more, and as high as six, firehouses in each of the 28 districts. In the other five no houses or apparatus are located.

These five districts are very small in area and their formation was brought about principally to secure sufficient money to install hydrants and to pay for fire company response from either an adjacent County district or through contract with a contiguous municipality.

When the Fire Protection Districts were first formed back in 1923, standard triple combination pumpers of various makes were purchased. They were, in those days, equipped with soda-acid chemical tanks. The L. A. C. F. D., which pioneered in converting chemical tanks to booster tanks, within a few years replaced the former with booster tanks ranging from 80 to 120 gallons capacity. These conversions and their proved efficacy were instrumental in developing the idea of desirability of water tank apparatus in the Fire Protection Districts where hydrants were scarce and still are.

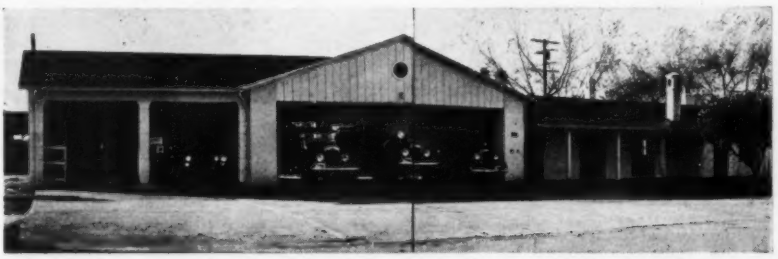
In some districts the cost of installation and maintenance of hydrants is prohibitive and a standard type rig, of which there are now ten in service, was developed. Production of the apparatus, carrying 1000 gallons of water and pumps usually of 900 or 1000 gpm capacity, has been curtailed by the WPB but when the ban is lifted it is expected that most of the present old rigs will be replaced with the type that has become standard.

At present the Fire Protection Districts have 51 pumpers in service, several relief pumpers and an additional amount of auxiliary equipment. The 51 pumpers are housed in stations, one or more to the district.

One of the pumpers, of 900 gpm capacity, carries 2500 gallons of water. Stationed at Norwalk, it is one of the two largest water tank apparatus in service. Known as Engine 20, it serves a district that is a mixture of business, residences, oil production and farming. Water supplies are limited and variable and the huge rig has proved invaluable on many occasions.

Any ordinary house fire can be controlled with less than a tank of water through use of small lines and fog nozzles. The 2500-gallon truck has a manifold arrangement at the rear from which six lines can be operated and the 1000-gallon trucks have four outlets.

Much fog nozzle equipment, developed by the late G. G. Griswold who was killed recently while serving with the Army overseas and who was a battalion chief for the Fire Protection Districts, is in use. Some rigs carry long



San Jose Field Division Headquarters Located in the Eastern Part of Los Angeles County
This building is typical of headquarters' structures used by the Field Division of the County. Note motorcycles used for dispatch work.

Fire Stations Helping to Protect Los Angeles County
Left: Smaller type fire house located in the Walnut Park Fire Protection District and serving as quarters for Engine 24. Center: The Lechusa Patrol Station in the Malibu Field Division. This station is located in the extreme west end of the County, about two miles north of the Pacific Ocean. Right: This fire house located in Santa Fe Springs Protection District quarters Engines 15 and 17 and also serves as headquarters for Battalion 2.

applicators to which fog nozzles can be fitted. They are used to permit the hoseman to approach the seat of the fire with little danger to himself. These pipes, curved to as much as right angles and fitted with fog jets, can be used to attack fires through windows and doors and are especially useful in fighting oil tank fires.

As a matter of fact they were first developed to combat fires in oil fields but have been put to such good use they are now standard equipment for structural as well as other fires. Chief Davis says it is as efficient in fighting brush and mountain fires as it is in the oil fields or on structures. Says Chief Davis:

"We use the Griswold Fognozl because we think it good equipment and because it was developed by one of our men. Chief Griswold, upon selling his patents, graciously provided that the County and all Fire Protection Districts therein be entitled to substantial discounts when purchasing Fognozl equipment. I am not trying to sell the Fognozl in particular—there are good things to be said for all types of fog nozzles. But we have found that fog nozzle equipment in general is a powerful weapon in the hands of our firemen and at the same time helps to conserve water where, as in our case, the supply is limited.

"In general, regarding fire apparatus, it may be said that this department has pioneered in the development of water-carrying apparatus and has done more to revolutionize its design and use than any other fire fighting agency.

"The use to which any piece of equipment is put is the final answer to whether or not its design and construction are worth while. We can say truthfully that our ideas and aspirations have been fully met and we believe we have the finest all-purpose equipment that can be devised.

"The WPB has refused us the privilege of constructing apparatus with large water tanks and we have been forced to take apparatus that, because of its small size, cannot be converted after the war is over. We feel that is unfortunate for we have the same feeling regarding acquisition of new equipment that we have in the conscription of experienced fire fighters. If any location in the country should have proper fire equipment and experienced firemen, it is the coastal areas which would be first subjected to attack by the enemy. We certainly hope, in line with the recent declared policy that more goods will be produced for civilian use and that the WPB will ease up somewhat on the fire apparatus restrictions in force now."

Field Division Officers and Patrolmen Are Provided with Either a One-Half Ton or One-Ton Pickup Type Truck

Depending on size, they carry from seventy to 140 gallons of water, have either thirty-eight or seventy-five gallon pumps, 200 feet one-inch cotton jacket hose and other fire tools.

One of the strangest phenomena connected with the business of fire protection in Los Angeles County is that of the little islands of unincorporated territory to be found in the heart of, and surrounded entirely by Los Angeles or some other city.

Los Angeles has expanded greatly through annexation during recent years. However, in some sections residents have fought annexation and have successfully resisted attempts to incorporate them within the city limits. Thus, these little islands were born. Most of them are organized into Fire Protection Districts and receive their protection from the L. A. C. F. D. However, the impression that "frontiers" exist and that it is necessary to have a visa to get from one such island to another is strictly erroneous. The Los Angeles Fire Department cooperates wholeheartedly, as do other fire protection agencies and mutual aid is not merely a theory.

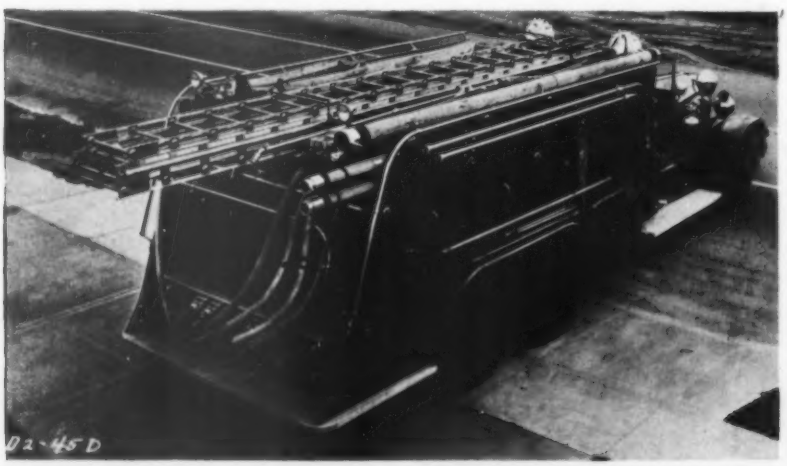
Towns Within City

For example there is a Fire Protection District known as the West Hollywood-Sherman District which is merely a hop, skip and a jump from Hollywood and Vine. Yet it is an unincorporated area and protection comes from three engine companies located there. In several such sections just northwest of the hill area known as the Doheny Estate, fire protection is given by the West Hollywood-Sherman companies. Should the fire involve the hills, the Malibu Field Division moves in to take over or aid.

Another such island is the Gilmore tract wherein are located the large Pan-Pacific Auditorium, the Gilmore Stadium and the Hollywood Baseball Field. Protection is given by the West Hollywood-Sherman district and by the Los Angeles city fire department because a fire in the tract would menace nearby heavily populated areas within the city.

Two other islands are located south of the east end of Altadena, and both within the City of Pasadena. However, they are part of the San Gabriel Valley Fire Protection District and receive protection from Engine 4.

When there are mutual aid responses, companies work under the direction of the senior officer having jurisdictional authority. Under the authority of the Mutual Aid Act, all fire departments within the County render mutual aid without reimbursement, the only exception being in the case of large moun-



One of the Two Largest Water Carrying Apparatus Ever Constructed

Designated as Engine 20 and located in the Norwalk County Fire Protection District, it carries 2500 gallons of water in addition to hose, suctions, ladders and much fog equipment. It has a 900-gallon pump capacity. Note the manifold arrangement on the rear step of the truck from which six lines can be operated. On the right side of the truck are two applicators of special design and equipped with fog nozzles. Fifty-five-foot and twenty-foot ladders are among other equipment. This rig provides good protection in a district where hydrants are scarce and water supplies not good.

tain fires. In such cases outside initial action zones involving assistance of the L. A. C. F. D. or the U. S. Forest Service, expenses for equipment and pick-up labor are allowed but the time of regular personnel is contributed.

The L. A. C. F. D. also operates the fire companies located at two county institutions, Rancho Los Amigos and Olive View Sanatorium, the former the county's "poor farm" and the latter a large tuberculosis sanitarium.

In service at the Rancho, near Downey and where the hazards are tremendous because of the old, frame structures of which much of the institution is comprised, there is a 350-gpm Obenchain-Boyer triple combination pumper manned by two engineers and 10 call men. Olive View, located in the northerly portion of the San Fernando Valley, is on the edge of the forest line, making for great danger from brush and forest fires.

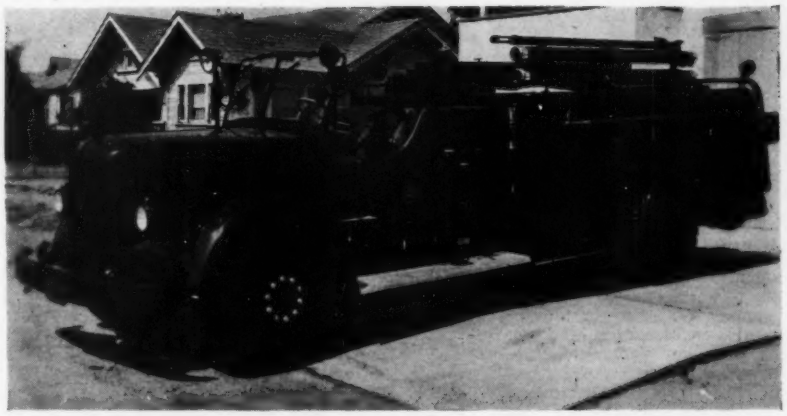
Both institutions are crowded and the responsibility of the engineers, who act as captains, is tremendous. At Olive View two engineers, two firemen and 10 call men man the 500-gpm American La France triple combination pumper.

Call men at both institutions are institutional employes who sleep in the fire stations. Regular personnel, firemen and engineers, wear the traditional blue uniforms and although they are paid from county funds and are county employes they come under the administration of the chief officers of the L. A. C. F. D.

Mutual aid protection is available at both institutions and at the sanitarium not only Los Angeles city apparatus but Soledad Field Division headquarters apparatus moves in.

The L. A. C. F. D. has considerable auxiliary fire equipment on hand, some of it supplied by the OCD, as well as non-fire fighting mobile equipment such as motorcycles used for dispatch work, 22 freight and personnel carrying trucks, two staff cars, four transportation inspection and repair trucks and two communication maintenance and construction trucks.

County-owned auxiliary fire fighting equipment includes 13 trailer pumping units; one skid pump unit; three 600-gallon tank apparatus, two of which have 100-gpm pumps and the other a 120-gpm pump; three 400-gallon tank jobs each with a 500-gpm pump; and four 300 gallon tank jobs with 500-gpm pumps. In addition there are on hand 39 trailer units, 30 skid-mounted pumps and 15 front end mount pumps furnished by the OCD.



Fire Truck Used by the Fire Protection Districts for Fighting Structural Fires in Unincorporated Areas of the County

The truck, Engine No. 4, is stationed at San Dimas. It carries 1000-gallon water tank, hose, other fire tools in addition to its 1000-gallon pump. Temporarily, production of this type rig has been halted by the WPB. Ten of the type, standard for the Fire Protection Districts, are now in service. More will be put in as soon as they are available.

Most of the auxiliary fire equipment has been placed in stations rented from finances furnished the County War Council but where this has not been possible or where more favorable response conditions are desired, some of the equipment has been located in regular fire stations. Under the emergency plan invoked at the beginning of the war, every effort has been made to decentralize all auxiliary equipment and on the yellow (preliminary air raid alert) signal all but one piece of equipment is moved out of auxiliary houses to prevent destruction of whole complements.

The L. A. C. F. D. has an emergency disaster plan in which every member or employe, male or female has an important part. Under normal conditions the plan would allow the department to cope with any major disaster without calling on other fire protection agencies for aid. However, under war conditions, the picture is changed considerably and in event of any major disaster, it would be necesssary to request mutual aid.

Most serious of the wartime problems is the lack of manpower. The L. A. C. F. D., at the time this information was supplied by Chief Turner through Chief Davis, had lost 130 members to the armed forces. Many of these men were "old hands" with anywhere from five to 18 years of experience in fire prevention and control. This has been a serious obstacle in maintaining usual efficiency because of the constant turnover of personnel, with enlarged training costs and eventual loss of many of the trainees either to the military service or to better paying positions.

Regarding the conscription of firemen for Selective Service, Chief Davis says:

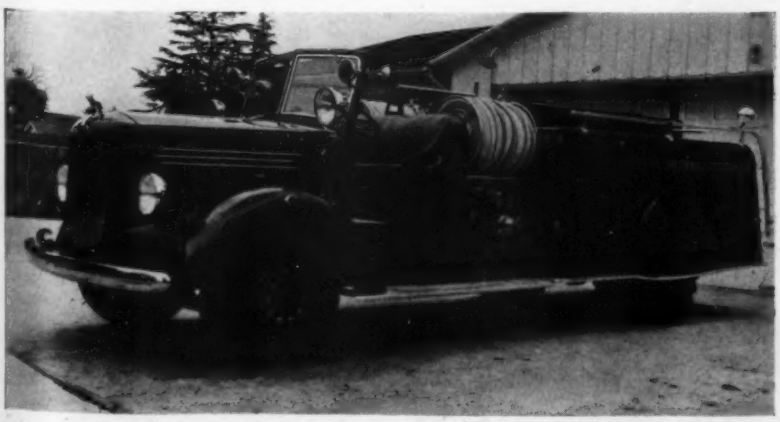
"It has taken a long time and much argument to prevail upon Selective Service to consider the fallacy of conscripting experienced firemen from the vital Pacific Coast areas.

"This has been a problem every fire fighting agency on the Pacific Coast has had to face. In the last few months definite improvement has been noted. However, this recognition on the part of the Federal authorities has come too late as the fire services of the West, generally speaking, have been so badly depleted of experienced manpower that on every fire of any consequence the chief officers have been at their wits' ends to deploy what remains of their experienced personnel in order to cope with the situation. While the new recruits are willing, it is a recognized fact that it takes not less than five years to make a thoroughly trained fireman, particularly one who can use the right initiative when the occasion demands."

It is interesting to note in passing that a number of auxiliary fire companies are composed entirely of women of whom there were about 350 signed up according to the annual report of Chief Turner, whose full title is County Forester and Fire Warden; Director of Parks. The report says:

"These auxiliary firewomen have demonstrated that they are as capable of handling fire equipment as many of

(*Continued on page* 584)



One of the Newest Rigs of Design Standardized by the Los Angeles County Fire Department

This one has a 600-gallon water tank, a 600-gallon pump, carries 1600 feet of 1½-inch double jacket hose and 600 feet of 1-inch single jacket hose. In addition it has two reels and an auxiliary 75-gallon pump which can be used while the truck is in motion, a matter of great advantage in fighting brush fires. This is used by the Field Division.

Hartford Circus Catastrophe

All Emergency Services Mobilize Quickly to Meet Connecticut's Most Tragic Disaster

By THOMAS F. MAGNER

ONE hundred and sixty-seven persons, over three-quarters of them children are dead, more than 225 seriously injured —many of them scarred for life—with total casualties reaching approximately 500, in Connecticut's worst disaster in point of lives lost and personal injury, as a result of the destruction by fire of the huge 20 ton paraffin and gasoline treated canvas tent of the Ringling Brothers, Barnum & Bailey's circus in Hartford, Conn., on the hot afternoon of July 6, 1944.

The fire broke out from what still remains an unknown cause, while the near-capacity audience of 7,000 persons was applauding the end of Alfred Court's animal act. On the high wire above the center ring the famous Wallenda aerial troupe was preparing to begin its death-defying feats. Suddenly there was a flash of flame near the main entrance of the show. The fire was small at first —a circus employee testified it looked as if it could have been extinguished with a pail of water. Then, abruptly, the flames rose toward the top of the 520 x 220 foot tent.

The circus band, at the opposite end of the enclosure, struck up the "Disaster March," traditional warning of trouble to the circus folk. People began to move from their red, wooden seats toward the exits. There was no panic at first, according to eye witnesses, but suddenly the flames were flashing overhead; there was a cry of "Fire!" and pandemonium broke loose, first at the runways where May Kovar was trying to herd the lions, pumas and tigers from the tent into their cages outside. Then it spread throughout the entire audience. It was these two steel three feet high runways that proved the worst barrier to the panic-stricken crowds trying to escape. In their frenzy men tossed children over them and women attempting to clamber over the obstacles fell into the terrified mob. Seventy bodies, some burned beyond recognition, were later found massed at this point.

The huge big top of "the Greatest Show on Earth" was reduced to ashes in less than twenty-five minutes; the tinsel and sawdust and much of wooden seats were gone and in their place was stark, indescribable confusion and tragedy.

All this happened as the afternoon's performance was but a few minutes old. At 2:44 P. M. Box 82 at Clark and Westland Streets was pulled, bringing Hartford Engine Companies 7, 2 and 16 and Truck Companies 3 and 4, Acting Deputy Chief Leon H. Crawford in command. The first arriving companies found Box 82 approximately one-half mile away from the fire and proceeded at once to Box 828 which is located in front of the circus lot.

One minute later, at 2:45 P. M., Box 828 at Barbour Street and Cleveland Avenue was sounded, with Engine Companies 14, 4 and 3 and Truck Company 1 assigned on a straight box alarm. The fire department records indicate that the two latter Engine Companies and Truck 1 operated at the fire. Deputy Chief Edward J. McNally arrived at this box and took command, until the arrival of Chief John C. King.

Several additional boxes were pulled but to only one, Box 836 Cleveland Avenue and Hampden Street, was response made. Engine Company 5 was dispatched to this signal. The final box alarm from Box 83, Main Street and Cleveland Avenue was received at 2:49 P. M. but no assignment responded.

Chief King Promptly at Scene of Fire

Chief King, riding in his car in another part of the city at the time the alarm was received, was notified over the car's two-way radio system that it was the circus. Recounting the events of the tragedy to the correspondent of FIRE ENGINEERING, Chief King said: *"As soon as I learned from headquarters that the fire was at the Ringling Brothers Circus I directed my driver to go at full speed to the grounds on Barbour Street. I was about three miles away at the time and reached the catastrophe on the fastest ride I ever had through the streets of Hartford.*

"When I pulled up to the scene" said the Chief, "the huge canvas tent, fanned by a breeze from the west, was burning like tissue paper and all the water in the world couldn't stop the progress of that blaze. My men worked like Trojans with hose lines until they almost dropped from exhaustion. Truck crewmen attempted to rescue the panic-stricken women and children that were caught in the path of the onrushing flames. Several ran toward us with their clothing ablaze and they were writhing in pain. One frantic woman fought with firemen to allow her to go back into that blazing inferno to rescue her little son. The firemen kept her on the outside as it meant another life saved. If she had returned under the tent she would never come out alive."

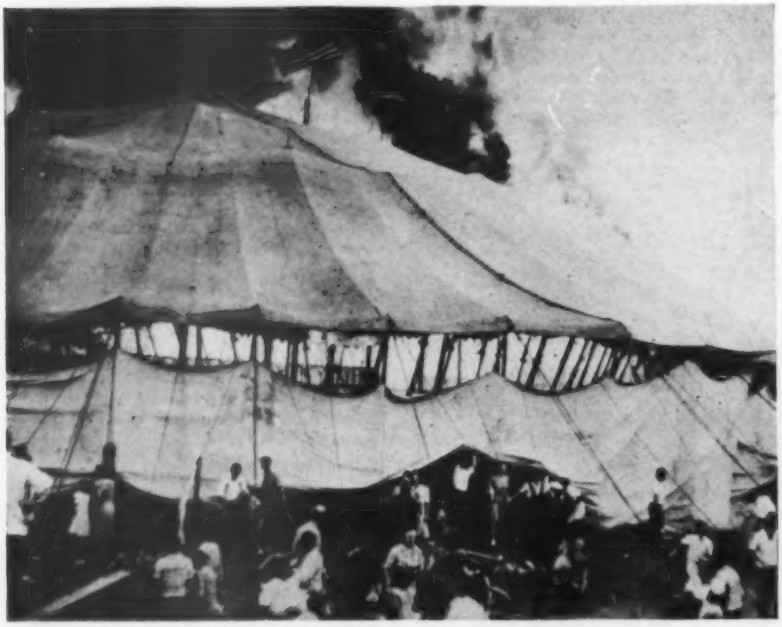
The terse but graphic report of the operations of the nine fire companies that worked on the fire, as given FIRE ENGINEERING'S representative by Chief King is worth quoting:

Eng. Co. 7: Capt. John F. McDonald in charge. On arrival at Box 82 found that fire was approximately ½ mile away and proceeded to Box 828 which was in front of circus lot. Stretched 900 ft. 2½" hose, worked this line inside of tent for 3 hours and 17 minutes. This work consisted of wetting down.

Eng. Co. 2: Capt. William J. Kirby in charge. Arrived at Box 82 and proceeded to Box 828. Used hydrant opposite circus grounds. Hydrant pressure was 90 lbs. Stretched 800 ft. 2½" hose, 1½" tip. Worked for 2 hours and 5 minutes. Stretched line to side of tent.

Eng. Co. 16: Capt. James J. Yacavone in charge. Arrived at Box 82 and proceeded to Box 828. Setretched 1000 feet of 2½" hose. Worked 2 hours and 48 minutes. Line was taken to front entrance of circus.

Truck Co. 3: Lieut. Edward M. Curtin in charge. Arrived at Box 82 and pro-



People Flee in Terror from the Menagerie Tent of the Ringling Brothers, Barnum & Bailey Fire while Smoke, in Rear, Rises from the Burning Big Top.

ceeded to Box 828. Stretched 800 feet of 2½" hose. 1" tip. Connected to hydrant in front of circus lot. Worked 1 hour and 55 minutes. Worked overhauling and carrying bodies from circus grounds.

Truck Co. 4: Lieut. William J. Conners in charge. Arrived at Box 82 and proceeded to Box 828. Work consisted of overhauling and carrying bodies out of debris. Worked 1 hour and 45 minutes.

SECOND ALARM

Eng. Co. 3: Actg. Capt. Edward M. D. Daley in charge. 4-way stream hydrant located at 132 Cleveland Avenue. Stretched 450 feet of 2½" hose. 1" tip. Worked 2 hours and 23 minutes.

Eng. Co. 4: Lieut. Timothy F. Kelliher in charge. Connected to hydrant in front of circus lot. Stretched 800 feet of 2½" hose. 1" tip. Worked 1 hour and 15 minutes.

Eng. Co. 5: Capt. James R. Griffin in charge. Connected to hydrant opposite 132 Cleveland Ave. Stretched 1350 feet 2½" hose. 1" tip. Worked 2 hours and 27 minutes.

Truck Co. 1: Actg. Lieut. Paul J. Wychodil in charge. Work consisted of overhauling and carrying bodies. Worked 1 hour and 36 minutes.

* * *

Most of the tragic details of the fire have been published in the public press . . . the rapid spread of the fire . . . its unknown origin . . . the panic at the animal runways . . . the evident effort of youngsters to get out of the tent via the same openings through which they entered . . . the igniting of light summer dresses of women and girls by the flaming pieces of canvas which fell into the crowd . . . the dropping of heavy trapeze equipment and big poles used to support the tent onto the crowd when ropes ignited and burned . . . the trampling of children in the front seats, despite desperate efforts of men and circus attaches who shouted *"Take it easy! Take it easy! Walk out quietly"* . . . the tragic efforts at locating missing ones and of identifying the victims. All these details need not be elaborated on here. What is of perhaps more interest to the fire service is the manner in which the emergency services, including civilian protection forces, went into action, supporting the fire and police services. Some idea of the mobilization of these disaster and emergency units and measures taken may be drawn from a broadcast by Governor Raymond E. Baldwin of Connecticut over radio station WTIC following the debacle.

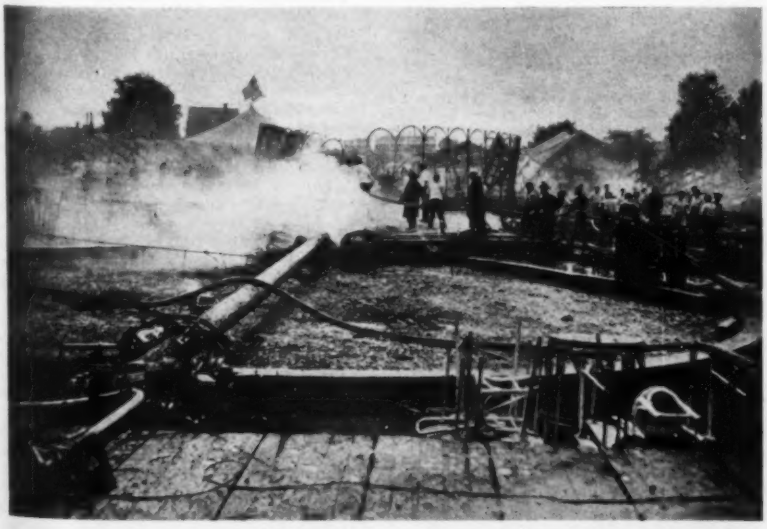
Flames Consume the Big Top of Ringling Brothers, Barnum & Bailey Circus as Poles and Tackle Fall on the Fleeing Audience.

According to the Governor, the machinery that went into action on that Thursday afternoon included the State War Council, the State Police, the American Red Cross, the State Guard . . . the Hartford War Council and its Citizens Defense Corps . . . local police, and Firemen, doctors, nurses, ambulance drivers, air raid wardens, telephone operators, Boy Scouts, messengers, in fact all the help the City could use. The Governor stressed the point that the disaster justified the organization and training of civilian defense forces and the wisdom of maintaining them even though the danger of enemy attack is remote.

"In wartime," said the Governor, "the normal protective forces of the community are necessarily weakened by loss of manpower. Hospitals are understaffed and there are fewer doctors. Police and fire fighting forces are below their peacetime strength. Volunteers must help, as they have done in Hartford, and to be ready for disaster the organization of volunteer forces in Civilian defense must be maintained."

According to His Excellency, the Commissioner of State Police and State Fire Marshal, Colonel Edward J. Hickey, it so happened, was in the audience at the circus, sheparding nine of his nieces and nephews ranging from four to fourteen years of age. He tossed them all to safety from the top seats to the ground, outside the tent. He said he saw hundreds of other children saved the same way.

Outside the tent was a radio car of the Hartford Police Department. When Colonel Hickey had made his way from the burning tent with the children who were in his charge, the alarm had been sent by radio to the Hartford Police Headquarters and firemen and additional police had been called and with ambulances were on their way to the circus grounds. The State Police were at once notified.



Firemen Cooling Down Wreckage of the Ringling Brothers, Barnum & Bailey Circus Fire. A Large Animal Cage Is Shown in the Background. One of the Main Tent Poles and Partly Burned Gear Remain where They Fell.

Efficient Hospital Service

Chief Hallissey of the Hartford Police Department and the Colonel in a hasty conference at the radio car, determined that all civilian defense forces would be needed. The magnitude of the disaster was already apparent. Through the Hartford Police, the Hartford War Council was called into action. Emergency ambulances from department stores, factories and trucking companies were summoned, along with the emergency medical servces of the city. Colonel Hickey called the Governor and told him the State Armory would be needed to receive bodies of the dead and that all civilian protection forces within reach of Hartford would be required. General Reginald B. DeLacour called units of the State Guard and directed preparation of the Armory as a morgue. State War Administrator Henry B. Mosle and Edward N. Allen of the

American Red Cross reached the scene and conferred with Colonel Hickey.

In the meantime, the injured were being rushed to hospitals as fast as ambulances could go back and forth. The Municipal Hospital, near the scene received the heaviest load. The first patients were admitted at 2:45 P. M. (note that time and compare it with the schedule of fire alarms). Extra doctors, and nurses, with equipment and supplies were rushed to the hospital. Army trucks began the removal of bodies to the Armory, where General DeLacour's staff and others, had made preparations for the melancholy task that lay ahead. When persons seeking lost members of their families reached the Armory there was little waiting and no confusion. They registered, giving their names and the name of the person they were seeking. Mimeographed forms had been run off for this purpose in the short time before the doors were opened. Girls were ready at tables and typewriters to record the information. Persons were admitted in small groups. A nurse's aide and a policeman walked with each grieved relative and assisted in the search. When a person was identified, the medical examiner completed arrangements for a release. A record of all the information was kept by the State War Council.

Outside, a police sound truck assisted greatly in maintaining calm. Persons waiting in line were informed in many instances that their children or other relatives had been found safe and there was no need for them to stay. The rolling kitchen of the Hartford War Council served coffee and sandwiches. The Red Cross Canteen Unit fed the workers inside the building. Nurses helped those persons who were overcome, and there were rest rooms and cots for them.

Clergymen of all denominations came to the Armory to give what aid and comfort they could to the grief-stricken. The Salvation Army set up water coolers. Uninjured children, separated from their parents, were taken by the Hartford Police to Police Headquarters and to the Brown School. The State War Council sent a stenographer to the aid of a lone teacher trying to record the names and addresses of the children at the school and notify their parents. All of these children were recovered by their parents a few hours after the disaster.

In his talk the Governor brought out the fact that throughout the afternoon and evening hours, continuous assistance was received from the radio stations of Hartford, which broadcast information to the public telling people where to report the missing and identify the dead, reading lists of persons who were known casualties, and so on.

Ambulance Called by Radio

The first public call for ambulances, it was disclosed, went out by radio eight minutes after the first box alarm for fire apparatus had been sounded. A special radio appeal for donors of type O blood on Saturday brought 100 offers in a few hours.

Newspapers, with special editions, greatly aided in bringing essential information speedily to the anxious people of the state.

At the time of the Governor's message the work of identification had not been completed. Possibly it may never be. Of the 127 victims who were taken to the Armory, seven remained unidentified at the time of his report. There were six persons listed by the State War Council as missing in the disaster. The list of missing persons at first was extremely long. War Administrator Mosle estimated that 10,000 calls were received at the State Armory during the twenty-four hours after the disaster and 2,700 persons were reported missing. As they were found their names were removed from the list. Persons were located in many ways, through telephone calls, through the aid of local war councils in their home towns, by special visits of the police.

Three members of the Hartford Fire Department found the true meaning of the uncertain agony that comes to families of persons listed merely as "missing."

Hartford Fire Department Hit

They are Lieutenant J. J. O'Connor and Firemen Joseph Viering and Vincent Barry, all of whom have at least one relative missing as a result of the soaring flames that swept the circus. Lieutenant O'Connor found his youngster in the hospital with a badly burned back, suffered when the child was trapped beneath the falling canvas. His joy over finding the baby was tempered, however, with the knowledge that his mother was killed in the fire.

Fireman Viering's wife was a victim and Barry's six year-old daughter lost her life. The three firemen were among the scores who made the rounds of cots at the State Armory.

The disaster and mutual aid plans, in effect throughout the state functioned to furnish aid from eastern and central Connecticut. Doctors and nurses came with hospital staffs from many cities; the State Personnel Department sent girls from State Government agencies. Police Departments of nearby towns sent men, and neighboring fire department of the injured and identification of nately were not needed. The Army, from its anti-aircraft units in Hartford and Bradley Field air base sent welcome help. The Navy rushed supplies and personnel from its New Haven and Hartford units. New York City sent equipment for the administration of blood plasma; four Boston doctors, all with experience in the Cocoanut Grove fire, spent a day in Hartford in consultation on the treatment of the injured and identification of the dead.

Identification of the bodies was made extremely difficult by the extent to which they were burned. Dr. Walter Weissenborn who, assisted by Dr. H. J. Onderonk of East Hartford, officiated as medical examiner, said he had not seen one case of suffocation. In many cases the flesh was covered with blisters. Bodies were badly charred and in scores of instances hair was completely gone.

Although thus far the cause of the fire has not been determined, at least two theories have been advanced. One is that the blaze started in a canvasmen's toilet erected outside the main tent, approximately 100 feet east of the main entrance, where a spectator may have tossed a match or lighted cigarette into some straw around the temporary toilet. Hal Oliver, press representative of the circus, denied this. *"The fire,"* he said, *definitely started at the roof of the tent. We have a theory, but we're not making it public now."* He said no credance was being given to any idea of incendiarism or sabotage, as first reported.

Another possible cause, was that the canvas may have become ignited by overheated electric spot-lights located at the juncture of side and roof sections of the tent.

Shortly after the fire Governor Baldwin, State Police Commissioner Hickey, Mayor William M. Mortensen, Fire Chief John C. King and City Fire Marshal Henry G. Thomas were commissioned as a group to make a thorough investigation of the disaster. Federal agencies are also conducting investigations. A number of circus officials were held on technical charges of manslaughter, arraigned in Hartford Police Court, and later released on bonds.

On July 14, Superior Court Judge John H. King of Hartford issued an order permitting the circus to leave the city nine days after the disaster, after security of $1,000,000 was posted by circus officials. It is said that all but $5,000 of the amount pledged will be held for claims arising from the fire and a small expense balance.

Following this action the circus returned to its winter quarters in Sarasota (Fla.) for refurbishing, leaving behind certain bits of evidence requested by State Police Commissioner Edward J. Hickey. This included samples of the grandstand and canvas, what remained of the warped steel lion cages and the runway used to move the animals in and out. The main tent pole was also left "as is."

Early in August, the circus, minus the big top, arrived in Akron, Ohio, for the first scheduled appearance following the fire. This performance was held in the Rubber Bowl, and will be followed by other appearances elsewhere, using local stadiums and ball parks san canvas tents.

Many Municipalities Are Revising Code

Tragic as was this disaster as in the case of the Cocoanut Grove and Triangle Shirt Waist fires, some good may eventuate. Already many municipalities have been overhauling their fire prevention codes to include inspection of circus, traveling shows and the like, and insistence upon fire proofing of materials, and installation of fire protective measures. In Washington, Congress was asked, August first, to investigate the practicability of establishing health and safety rules applicable to circuses which travel from state to state. In the District of Columbia, the Commissioners raised the question of the "fire safeness" of canvas used in temporary housing, such as the Army huts and tents, abounding in that area.

Meanwhile on the old theory that tragedies never come singly, there has been more trouble reported in kindred fields. In Denver, the fatal fire at Elitch's Gardens (described elsewhere in this issue); in Baltimore, the burning of the Oriole's baseball park; in Detroit the incendiary fire at the State Fair Grounds Race Trace, with loss of one human life and 36 race horses and property loss of $25,000,000; mention of these fires is made elsewhere in this issue.

As this issue goes to press, comes National Board of Fire Underwriters Bulletin No. 196, dated July 14, 1944 captioned *"Circuses and Carnivals"* which concludes: *Safety at circuses and carnivals is largely a matter of fire prevention and of quick action to extinguish a small fire. The danger of panic is outstanding and ample exit-ways must be assured.*

New War Product Produces Problem for the Fire Service*

THE production of synthetic rubber has grown at an amazing rate. Large plants throughout the country are now producing great quantities of butadiene and other materials which form the component parts of this relatively new product. Still more plants are carrying on the processes of combining these ingredients into their final form.

It wasn't long after this country seriously embarked on its synthetic rubber program that it was discovered that butadiene, the major ingredient of synthetic rubber, presented an extremely dangerous and violent fire hazard. This fact was emphasized by the large production and the strategic importance of the material in the war effort. The natural result was that the attention of fire prevention groups was focussed upon the problem, with the result that numerous preliminary studies and at least one large scale investigation and experiment have been made. This last was the test conducted by the Rubber Reserve Company in the fall and winter of 1943-1944, in which fire protection companies cooperated. Tests were also conducted on other types of inflammable liquid hydro-carbons and the results, therefore, apply to the fire protection for all industries handling and processing these materials.

Highly Inflammable at Atmospheric Pressure

It is probably safe to say that the fire service generally has been, and for the most part still is, ignorant about butadiene, butylene and the butadiene-butylene mixtures. Students of the service who had participated in the initial studies and experimented with these gases early established one important point, i.e.: that the butadiene fire was not to be extinguished, but allowed to burn until all the vapors were exhausted. The reason for this preliminary conclusion is contained in the physical and chemical characteristics of butadiene itself. Butadiene is a very highly inflammable gas at atmospheric temperature and pressure. It boils in the atmosphere at 23 deg. F. and has a vapor density of twice that of air. Because of this extreme volatility, heavy vapor density, and wide explosive range of the gas, the hazard is very great; and extinguishing the fire would leave the remaining quantities of the vapor present as an explosive mixture. The presence of large quantities of unburned butadiene vapor would then be a constant severe fire hazard involving danger to both equipment and personnel.

The three objects of the most recent investigation, November 1943, January 1944 were, (1) to determine the minimum quantity of water fog that would protect the structures from butadiene fires during the entire period of burning, and the best means of applying the water fog to accomplish this purpose, (2) to determine the heat input during a fire into tanks containing butadiene so that they could be vented accordingly, thereby preventing over-pressuring and consequent bursting, (3) to determine the extent of exposure from any given fire so that calculations of total water supply would be possible, and so that an idea of the scope of the problem could be obtained.

There isn't room to publish the details of all the tests conducted in this investigation. Actually, the fire service is more interested in the conclusions than in the method of arriving at them.

Two Methods of Applying Water Fog

It has been evident for some time that there were at least two distinct methods of applying water fog for the protection of structures and materials exposed for fire. The methods are quite different and both were included in the tests in question. The first is the application of water fog directly at and near the specified structure and materials. The second is the application of a smaller quantity of water to the same surfaces and an additional application of water fog directly into the fire at a point near its source.

The tests, therefore, were to determine the minimum quantity of water fog in gallons per minute per square foot of surface which would provide this protection.

The second method of protection was derived from the assumption that the application of water fog into a flame would substantially reduce its temperature and volume. It followed that a very minimum quantity of water fog would then be required to protect exposed surfaces. If, therefore, the fire hazard consisted of a relatively great exposed area in comparison to the area from which the flame was produced, a substantial water saving would be obtained. In the case in question the tests had to determine two values, (1) the required quantities of water fog per square foot of flame source area, and (2) the very minimum quantity of water feg per square foot applicable to the exposed surfaces.

The tests were conducted in a prepared area, in which a large tank (2100 gallons capacity) was mounted on concrete supports, in a dyked area of 300 square feet. This tank was partially filled with water and contained accurate instruments for measuring heat, and other factors. Fuel for the fires was supplied from high pressure tanks on several towers located a safe distance away from the dyked area. It was necessary to use high pressure tanks for the butadiene. A larger low pressure tank was used when gasoline was the test fuel. Piping with the necessary fog-nozzles was located at various places and other instruments measured the water flow, pressures and so on. In order to counteract any wind which might impair the tests a wind machine was used.

Conclusion Reached

The conclusions reached, following some 38 tests which varied in length from a few minutes to four hours and covered many variable conditions, dem-

Butadiene
$CH_2{:}CHCH{:}CH_2$

Synonyms:

Butadiene, Divinyl, Vinyl Ethylene

Properties of Butadiene:

Molecular Weight	54.05	
Boiling Point 760 mm. (1 atm.)	—4.7° C.	23.5° F.
Melting Point	—113.0°	—171.0°
Specific Gravity 15.6°/15.6° C. (60° F.)	0.626	
Weight per U. S. gallon (60° F.)		5.2 lb.
Refractive Index 15.6° C. (60° F.)	1.432	
Heat of Vaporization	108 cal./g.	194 Btu/lb.
Specific Heat cal./g./°C.	0.61	
Vapor Pressure, abs. —40° C. (—40° F.)	148 mm.	2.86 lb.
" " " —15° C. (5° F.)	491 mm.	9.5 lb.
" " " 40.6° C. (105° F.)	2,950 mm.	57.0 lb.

Solubility:	Soluble in alcohol, ether and hydrocarbons. Insoluble in water.
Description:	Water-white clear liquid under its vapor pressure. Colorless gas at room temperature and pressure.
Toxicity:	It is said to possess the usual diene toxicity. Vapors even in low concentration should not be inhaled.
Storage:	Should be stored in pressure vessels out of contact with oxygen. The peroxides are reported to be explosive.

Polymerization:

Butadiene polymerizes slowly on standing, and more rapidly upon application of heat, to a rubber-like substance. The polymer of butadiene may be worked into a synthetic rubber and processed in much the same way.

Uses:

The chief use for butadiene is polymerization into synthetic rubber either alone or with copolymers. The polymers have specialty uses and some are superior to natural rubber for tire stock.

Packing:

10,000 and 8,000 gallon propane or butane tank cars.

*Abstract of Report on Fire Control Tests for the Synthetic Rubber Industry conducted by Rubber Reserve Corporation and Rockwood Sprinkler Corporation at Baytown, Tex., November, 1943-January, 1944.

onstrate how structures and equipment may be protected from fires arising from liquid hydrocarbons by the use of water in very finely divided form (generally termed water fog). They also show that this protection may be accomplished by either of the two methods of applying the water fog: (1) protecting equipment and structures by applying water fog directly to the materials which are to be involved in fire. The quantity of water fog required for this method is from 0.2 to 0.25 gallons per minute per square foot of the exposed surfaces. These values apply only to water fog equipment used in these tests to obtain specific values; (2) the other method is to apply water fog directly into the flame as well as on to the exposed surfaces. This results in a decrease of both flame volume and temperature thereby decreasing the severity of exposure. In this case surfaces may then be protected with 0.1 gallons per minute per square foot. The quantity of water fog required to reduce the flame volume and temperature is from 0.3 to 0.5 gallons per minute per square foot of inflammable liquid surface. Because this type of protection depends upon the evaporation of the water particles into the flames, the above values again apply only to the water fog equipment which was used in these tests.

The extreme intensity of this type of fire and the tendency of the flames to deposit carbon particles upon cooler surfaces both demand immediate operation of the water fog system. Such systems should nearly always be automatic in character so as to minimize the period of delay between ignition and application of the water fog.

Enough information has been obtained on the subject of heat input to properly decide upon venting capacities. Existing pressure-relief equipment on storage containers may be studied to determine their adequacy. Proper emphasis must also be placed upon the actual engineering of each fire protection system. Consideration must be given to the possible formation of carbon deposits and other dry spots. The effect of heat upon piping and its supports, the pattern, range, distribution velocity, and quantity of the water fog discharge from each head are all important factors.

As far as is known at the present time, and without evidence to the contrary, the information obtained in all the tests may be successfully applied to the protection of all structures materials and processes exposed to fires from liquid hydrocarbons.

Firebug Confesses Setting Costly Fire

Fire of incendiary origin, that cost the life of one man, destroyed thirty-six race horses and two barns at the Detroit State Fair Grounds Race Track, resulted in loss of $225,000 and gave Detroit firemen a tough fight.

The dead man was David Scott, 56, a groom of the David Ferguson Stables, Detroit. One of the blooded horses killed was from that Stable, "Bell Buzzer" which ran seventh in the Kentucky Derby this year. True to misapplied "hoss sense" "Bell Buzzer," after being twice rescued from the blazing inferno, ran back to his death.

The first alarm was received at 12:21 A. M. from Box 6686, five blocks from the fire and was said to have been pulled by a citizen who saw the fire from his home. This brought Engines 44 and 51, Ladder 18 and Chief Erickson of the 9th Battalion. At 12:23 A. M. (two minutes later) Box 6731 was pulled. This is located at the scene of the fire, and brought the Chief of the 4th Battalion, Rescue 2, Engines 56, 40 and 43 and Ladder 24. Upon arrival at Box 6686, Chief Erickson shot in a second alarm (12:27 A. M.) bringing additional Engines 47 and 39, Ladder 15 and the Fire Department Ambulance.

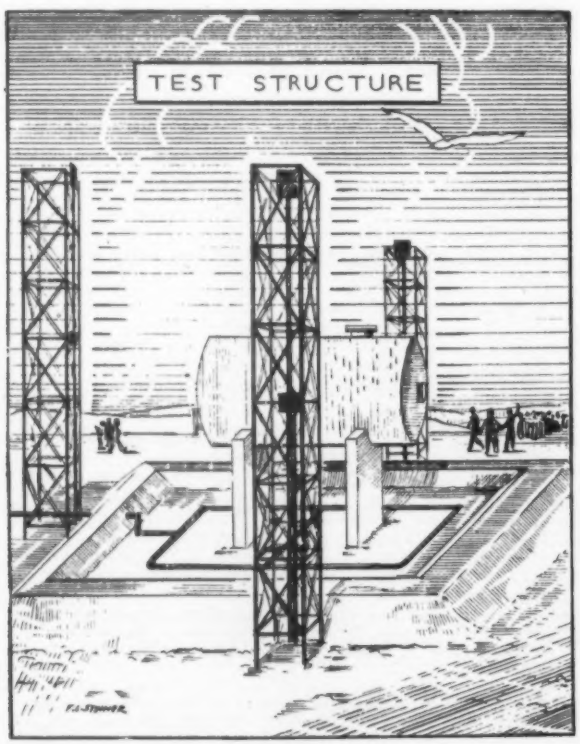
The barns were a blazing inferno, flames being visible in downtown Detroit, six miles away. At 12:35 A. M. a third alarm was struck from Box 6686 bringing the Chief of the 10th Battalion, Engines 21, 17 and Ladder 30, making a total of nine engines, four ladders, one ambulance, one rescue squad, three Battalion Chiefs and the Chief of Department, together with Chiefs of Apparatus, Water Supply and Fire Alarm Telegraph. The fire was considered by the Department as a "four bagger."

Complicating the firefighter's job was the fact that all of the lines had to be stretched by hand, from hydrants located on State Fair Avenue, across two high steel wire fences, and a parking lot, in order to reach the fire. The stretches varied in length from 300 to 700 feet. Although Detroit does not officially approve the use of auxiliary firemen a few responded in their own cars and assisted in stretching and manning second lines and in picking up to facilitate return of the companies. The fire was fought for over 3½ hours.

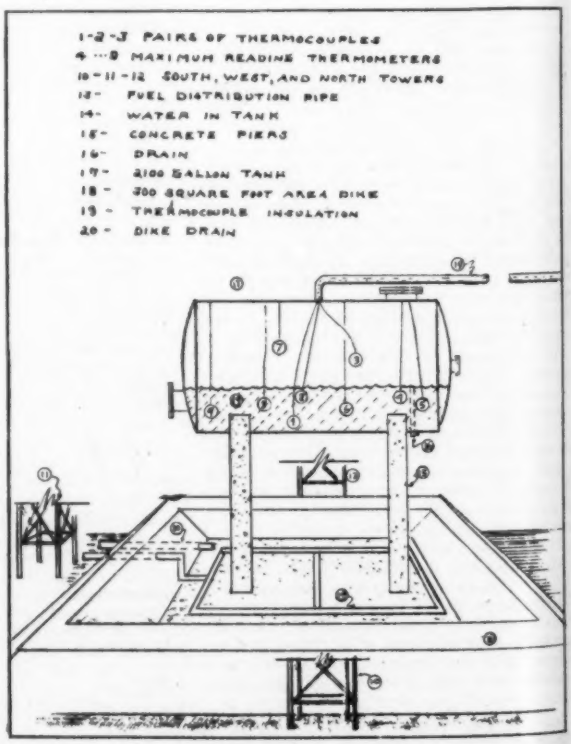
The barns destroyed were 420 feet and 184 feet in length. There were sixty-nine horses stabled in the two barns, of which a total of thirty-six perished.

Thirty minutes before the fire was discovered a "hanger on" at the race track

(*Continued on page* 596)



Arrangemetic View of Test Set-Up.


1-2-3 PAIRS OF THERMOCOUPLES
4 - 9 MAXIMUM READING THERMOMETERS
10-11-12 SOUTH, WEST, AND NORTH TOWERS
13- FUEL DISTRIBUTION PIPE
14- WATER IN TANK
15- CONCRETE PIERS
16- DRAIN
17- 2100 GALLON TANK
18 - 300 SQUARE FOOT AREA DIKE
19 - THERMOCOUPLE INSULATION
20 - DIKE DRAIN

Schements of Units in Test Layout.

Responsibility of Fire Chiefs for Safety of Public

Recent Catastrophies Emphasize the Task They Face in Protecting Those in Places of Public Assembly

By W. J. SCOTT, K.C.*
Fire Marshal, Province of Ontario

THE responsibility of fire chiefs for the safety of their citizens in places of public assembly has been emphasized by two disastrous fires in recent weeks. The attention of the entire continent was focused on the need for fire safety in public halls by the Cocoanut Grove disaster in Boston late in 1941, when nearly 500 persons perished, and the Knights of Columbus fire in St. Johns, Newfoundland, shortly afterwards where over a hundred persons died. Then in Ontario, in the City of Hamilton, on May 24 last, a dance hall fire cost the lives of ten persons and brought serious injuries to 33 more. On July 6 the terrible circus fire in Hartford, Conn., cost over 150 lives, with about 200 seriously injured.

These disasters not only make plain the responsibility of fire chiefs, but also make it easier for them to secure public co-operation or the support of their municipal councils to properly carry out these responsibilities. Today fire chiefs have a real opportunity to accomplish much in better fire protection, and if any fire chief does not take advantage of this opportunity he is not only doing himself and his brigade a disservice, but he also fails in his duty to protect the citizens he is hired to serve.

The Moose Hall Fire

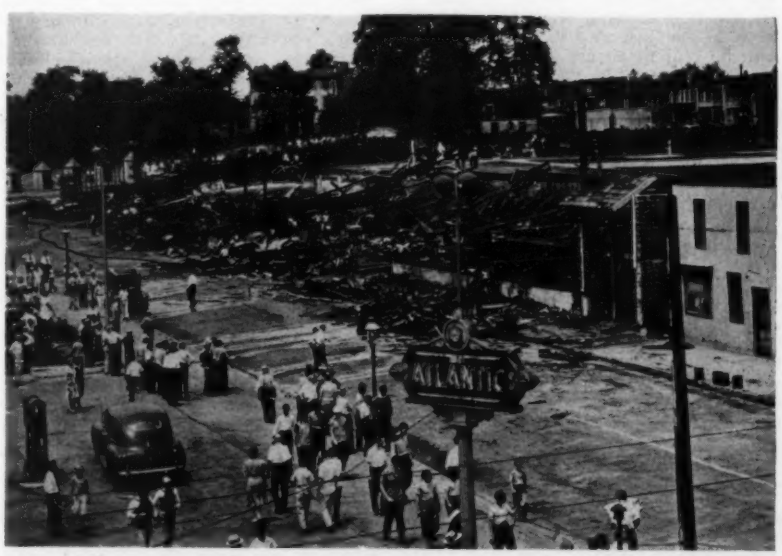
The details of all the disasters I have mentioned are probably well known to all fire chiefs, but the Moose Hall fire in Hamilton is in a somewhat different class from the other disasters. Not only was the loss of life very much smaller, but after an extensive investigation by the Hamilton City police and the Ontario Fire Marshal's Office, a 25-year old man who was at the dance has been arrested, charged with the responsibility for setting this fire and he is being held on a charge of murder with his trial scheduled for this autumn. Under the circumstances of this pending murder trial, I am unable to give any details of the fire. However it is possible to say that Moose Hall was a two-story brick building of wood joist construction with a lodge room on the second floor, in which a dance was being held on the night of May 23-24 by the members of a recreation association of a local dairy. This second floor lodge-dance hall had as its single means of egress only a single stairway from a long hallway leading to the front door on the first floor. When the fire started in a room just below the stairway and burst out the glass panels which lined the lower corridor, there were 73 persons at the dance. Four of these were on or near the stairway and got out the front door, with minor injuries; one woman died in the dance hall above; and the other 68 had to get out the second floor windows which were 21 ft. 8 ins. above the ground level. Nine of these persons escaping by the window died later, 33 others required hospital treatment, and most of the remainder suffered minor burns or injuries.

There was no second or emergency exit from these premises. It was not a public hall within the definition of public halls under the Ontario Theatres Act which is based on halls where an admission charge is made. Being in the class of a private lodge room rented to a private organization for a gathering of their own members where no admission fee was collected, this Moose Hall, for some reason or other, had previously escaped proper attention as to exit facilities. However, this fire has led to a judicial investigation instituted by the City of Hamilton into the adequacy of its building by-law and as to whether the inspection service in Hamilton by the City Building Commissioner and the City fire department has been conducted as it should be.

Provincial Action

As to provincial action in connection with safety in public halls, Ontario fire chiefs will recall that immediately after the Cocoanut Grove disaster the Fire Marshal's Office sent special instructions to all fire chiefs in the province requesting them to immediately investigate places of public assembly in their own communities. This did result in action by a great many fire chiefs; for example, within ten days of receiving this circular the fire chief in Peterboro Issued Orders under the Fire Marshal's Act against seven public halls in this community. Even in the capital city of Toronto some surprising states of affairs were found in public halls, and the same is true of many municipalities throughout the province. Since that time, in the Quarterly Bulletin issued by the Fire Marshal's Office, in some special circulars and in all our contacts with municipal brigades

*An address delivered before the Dominion Assn. of Fire Chiefs, in convention at Quebec City, July 12, 1944.



Fire Razes Oriole Base Ball Park

Fire of undetermined origin razed the stands of Oriole Park, home of the Baltimore International League Club, Baltimore, Md., with loss of $150,000. All uniforms and playing equipment of the Baltimore Club and the Syracuse Chiefs was destroyed together with office equipment and irreplaceable prized trophies. A hardware store and cafe on a corner next to the stands were gutted. Intense heat cracked windows in nearby dwellings while a truck and two automobiles were burned and others damaged, giving the fire department under Chief Howard Travers a tough workout.

we have been stressing the necessity of properly supervising places of public assembly. One of the more valuable educational items in this program was a special booklet on fire escapes and exit facilities which we purchased from the Illinois Fire Marshal in April last and distributed to all fire chiefs in the province.

Fire Chiefs' Powers

Fire Chiefs in Ontario have had for over twenty years very wide powers to deal with hazards in public halls under the provisions of Section 20 of the Fire Marshals Act, in which anything they may require as to exit facilities may be ordered under provisions that impose very heavy penalties for non-compliance. In addition, at my suggsetion, fire chiefs were given authority from March 1, 1944, to enforce the regulations governing theatres and public halls, which had been passed under the Ontario Theatres Act, an authority which previously had been held only by municipal police officers. Since the Moose Hall fire, on the instructions of the Hon. L. R. Blackwell, K.C., Attorney-General for Ontario, the Fire Marshal's Office has prepared and distributed to all fire chiefs and all municipal clerks in Ontario a pamphlet entitled "Fire Safety Rules for Places of Public Assembly" of which copies will be furnished to any other fire chiefs in Canada who write in for them.

Because the provincial regulations for public halls were designed only to facilitate the collection of amusement tax and were not accompanied by any provincial inspection service, the provincial regulations have now been repealed so as to leave the field of public hall regulations and supervision and licensing entirely open to the municipalities, who have had authority to pass by-laws in this regard under Ontario laws which have been on the statute books since 1849. To aid the municipalities in this program, the Attorney-General has had the Fire Marshal's Office prepare a Model Public Hall By-law which is now in the printer's hands and which will be sent to all fire chiefs and municipal clerks within the next couple of weeks. In addition, the provincial government has appointed a Royal Commission to study the whole problem of public safety in places of public assembly, which is headed by His Honour Judge Ian M. Macdonell, whom most Ontario fire chiefs already know personally from his work as Executive Director for nearly two years of the Ontario Civilian Defense Committee. It is expected that his report will lead to important progress in safety of places of public assembly in this province, and I am authorized to tell this meeting that the Dominion Association of Fire Chiefs will be invited to make formal submissions expressing the views of the fire chiefs to this Royal Commission.

Fire Chiefs' Responsibilities

The circus disaster last week immediately brings to mind what would be the situation in Canada and what is the responsibility of municipal fire chiefs. It may be of interest that only last August, in company of the fire chiefs of York Township and St. Catharines, I attended a circus performance in Chicago of this same circus and probably in the same tent which burned in Hartford. It so happened that all three of us, as soon as we got to our seats and looked at the immense crowds jammed together under acres of canvas, looked at one another and said, "What would we do if there was a fire?" We unanimously agreed that we would not try to get out through any of the exits, but would slide down between the seats to the ground and try to crawl out under the wall of the tent. The minds of all three of us have in the last few days gone back very vividly to that night in Chicago, particularly as we read in the newspapers that at one exit, which was impeded by metal railings, the bodies were found of 80 persons who had jammed this supposed exit.

As to the question whether there could be such a circus fire in Canada—there is obiously only the answer that there could easily be such a disaster here. Only a comparatively few municipalities have proper arenas of sufficient size to hold a circus in a building where thoroughly adequate fire precautions and fire safety measures can be taken. If we are to have circuses in the remainder of our communities in the days after the war, when money exchange difficulties do not prevent circuses coming to Canada, such circuses will have to be held in tents. The same dangers exist to a great degree in midways and carnivals also.

Precautions to Be Taken

If this is to be the case, what precautions can be taken to prevent circus disasters here? Possible precautions, which apply to midways as well as circuses, come under four broad divisions:

1. *Construction*—For the travelling circus there seems no betterment of the usual practice of a circus tent with wooden seats. The Ontario Fire Marshal's Office knows of no way to adequately fire-proof a canvas tent, although certainly tents which have been treated with wax or some flammable substance should be prohibited. The difficulty is that practically all the fire-proofing treatments are of chemicals which are soluble in water, and the first rain would largely remove any fire-proofing treatment. There is one class of fire-proofing by means of metallic paints, which are not so affected by moisture, but these are not satisfactory for canvas, as the handling and flexing of the canvas would break the metallic paint into scales. Considerable research is under way to obtain a fire-proofing treatment which is weather-proof.

Therefore, little can be suggested at this time as to better construction features for fire safety in circus tents. One deputy fire chief suggests that the vertical side walls of the main top tent or any midway tent for more than 50 persons should be placed at a distance of at least 10 feet away from and outside the top portion of the tent. This would accomplish the double purpose of preventing any fires originating at the ground level being communicated to the tent proper, and also facilitating emergency exit of persons under the tent roof.

2. *Exits*—Here much improvement can be made in what has been the practice in many circuses in the past. Even at the expense of considerably fewer seats inside circus tents and at the trouble of providing attendants at more openings of a main tent, adequate exit facilities for circus crowds should be insisted upon. Exits should be provided at all four sides of the main circus tent, with at least two exits from every smaller tent to which the public are admitted. These exits should be of adequate width and unobstructed by railing, barricading or additional seating. At least the usual standard of an exit width of 22 inches for each 100 persons attending a public gathering should be used as the standard for the total number and size of exits required for a circus tent.

Control of Combustible Material Common to Circuses

3. *Housekeeping*—In the ordinary carrying-on of the circus business it is frequently necessary to use large quantities of sawdust on the ground, but the quantities of this can be controlled to certain areas and also the hazard lessened by keeping the sawdust partially moist. Also, to feed many of the circus animals great quantities of hay are required and straw is used for bedding. Again, the locations for this can be controlled and the quantities kept near the main tents frequented by the public can be restricted to the minimum immediately required. A third hazard is an accumulation of waste paper for which frequent collections should be required and the disposal of all debris away from circus properties insisted upon. All these items provide serious hazards from a carelessly dropped match or cigarette, and the hazard can be minimized only by constant supervision. Any heating appliances or open flame should be prohibited in any tent to which the public is admitted. Gasoline or other flammable liquids should be stored well separate from all tents, and any auxiliary gasoline motors so located that they and their exhaust pipes will not start a fire.

4. *Fire Protection*—In addition to whatever fire protection facilities the circus provides for itself, it would seem both reasonable and desirable for the municipal license fee for a circus to be made sufficiently high to cover the cost of providing a municipal fire pumper and a crew of municipal firemen to be on duty on the grounds at least during all public performances. Coupled with this, of course, is the necessity of locating the circus only in an area where hydrant facilities or large static water supplies are immediately available.

Lessons Learned

From the Cocoanut Grove disaster fire chiefs had impressed on them again the hazards from flammable decorations, and from locked and improper exits. From the St. Johns fire they learned again of the dangers of wooden construction and hidden spaces above the ceiling, with difficulties with exits and of the panic when the service lights go out. From the Moose Hall fire there is the lesson of the necessity of a second exit, no matter how small the crowd may be. From the Hartford circus fire there are further lessons to be learned, and I trust the remarks above will be of assistance to the fire chiefs in their plans for public safety in their communities. It is to be hoped that the combined efforts of everyone will result in greater safety from fire for the public when they assemble, not only in Ontario but anywhere in Canada.

Ammunition Blast Demolishes Ships and Shore Structures

About 300 Lives Lost in Greatest Explosion of War

By BOB GREENOCK

FIVE Coast Guardsmen, members of the crew of a fire barge which was standing by, were among the 320-odd military personnel and civilians killed when two ammunition ships exploded with quake-like intensity at 10:19 p.m. the night of July 17 at a pier at the Naval Ammunition Depot at Port Chicago, Contra Costa County, 38 miles northeast of San Francisco.

In addition to those killed, hundreds of military personnel and civilians were injured. Most of the civilians hurt were cut by flying glass and debris in the towns of Port Chicago, Pittsburg, Concord, Avon and other nearby populated places.

The blast, which rocked the area for miles in every direction, was so intense as the hundreds of tons of munitions let go that it registered as a "small earthquake" on the University of California seismograph, according to Professor Byerly, university seismologist. He said it registered on the machine for three minutes.

Fireboat Demolished

The Coast Guard's Fire Battalion barge, part of the command of Lt. (j.g.) O. S. Peterson, was blown to bits as it stood by the 10,000-ton S.S. Quinault Victory, delivered for service only a week before, which was loading. Nearby was the S.S. E. A. Bryan, an older ship, which had completed loading. Torn and twisted fused metal plates from the two ships, valued at $4,300,000, were hurled miles in every direction. Some pieces, looking like huge pieces of shrapnel, imbedded themselves in sidewalks and streets, houses and barns for miles around, yet they killed none of the civilian population.

In the stream several other ships were damaged, including a Coast Guard patrol ship and a Red Line tanker.

Fate, which snuffed out the lives of an estimated 250 Negro enlisted Navy men, nine white officers, 70 U. S. Maritime Commission seamen, five Coast Guardsmen and three civilian railroad workers, was kind, too.

A number of men missed death or injury because they were on leave or liberty. Two hours later would have found many more men back aboard their ships, in their barracks.

But the greatest kindness of all was the lack of fire despite hundreds of live wires that were torn down by the explosion and broken gas mains whose fumes could have fed ravaging flames that would have added to the estimated damage of more than $5,000,000 done to surrounding towns. Water mains were twisted and broken in Port Chicago but quick action by gas and electric company employes, firemen, police, sheriff's deputies and civilian defense workers precluded damage from fire.

Emergency civilian defense machinery was put in motion and fire and other crews moved into the area along with the hundreds of ambulances with crews of doctors and nurses that came from ten nearby counties.

Nearly all nearby towns that could spare a rig or two sent water wagons to the depot; all who had lighting equipment to spare rolled it in for the entire area was plunged into darkness by the explosion which ripped power lines.

The only fire in the entire area started among debris at the depot. The fire was eating toward damaged steel boxcars, ripped open as though with a giant can opener, loaded with blockbusters when four Negro sailors moved in with extinguishers and, without regard for personal safety, quelled the flames.

The enlisted personnel at the depot, working at loading the ships, were Negroes. More than 20 of their buddies at Mare Island answered a call for volunteers when word of the disaster was flashed.

Exact cause of the explosion, one of the most disastrous in the history of the nation and California's worst, probably never will be known, said Captain N. H. Goss, U.S.N., commanding officer of the Naval Ammunition Depot at Mare Island. "We have no basis for giving any cause of the explosion as there are no close survivors to give evidence of what happened," he said.

However, the Navy Department ordered a thorough investigation and a board of inquiry met less than twelve hours after the explosion took place.

The blast shot a white flame into the sky. Flames seemed to leap a mile into the air. A naval aviator, flying 8000 feet above Port Chicago at the time of the blast, reported to his communications center by radio that the flames of the detonation roared above his altitude and he climbed to 10,000 feet to escape the flames and debris. The glare was seen at Santa Cruz, 100 miles down the coast. Persons miles away saw the white flash followed by red incandescent streaks many seconds before they felt the blast.

An ammunition train, twelve cars loaded with aerial bombs, was within sixty feet of one pier which was demolished yet not one of the bombs exploded. Other cars loaded with explosives were torn and ripped open despite the fact they were protected by huge revetments.

The Red Cross sent supplies of all sorts. Twelve disaster relief trucks were sent from San Francisco as was Searchlight Engine 1 of the city's fire depart-

(*Continued on page 602*)

Wreckage Resulting from the Explosion of Two Ammunition Ships

Here is a view of the wreckage left along the Port Chicago waterfront after two ammunition ships blew up in the harbor. The cause of the blast was not determined, but more than 300 are known to have died because of it, and hundreds more injured.

Fire Station Design and Construction

Fire Service to Face Need for Large Scale Construction After the War

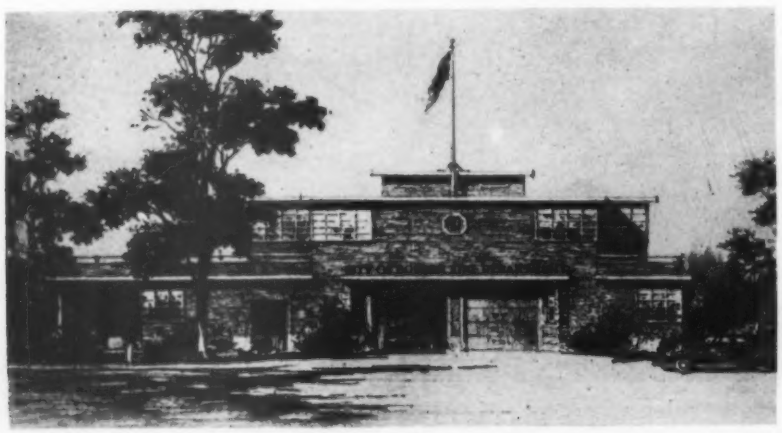
Adapted from material supplied to this journal by GEORGE ERNEST ROBINSON, nationally known architect of fire stations and other municipal buildings

ACCORDING to estimates based on extensive surveys by the International Association of Fire Chiefs and FIRE ENGINEERING, the fire service will undertake an extensive building program after the war. Structures to be erected, the studies disclose, will run the gamut from small township or rural fire halls and stations to most imposing municipal fire headquarters, some housing most modern fire alarm bureaus, and department repair shops, warehouses and miscellaneous structures. The vast majority of the buildings to be erected, however, will be what is known in the fire service as fire stations or fire houses.

It is estimated this construction will run into the hundreds of units and many millions of dollars. In addition, there will be large numbers of municipalities that will embark upon extensive rebuilding and reconditioning programs. This, also, will call for large-scale spending. All of these activities will be in line with the post-war plans for "streamlining" the fire service which it is confidently expected will make rapid progress during the next decade, particularly if, as is expected, the federal government will jointly underwrite municipal construction programs.

Forethoughtful cities, towns and villages are alive to this possibility and the need for having plans for public works improvements prepared and ready is imperative. This is attested by the number of "planning commissions" and civic improvement organizations already at work. As the above mentioned surveys indicate, it is evidenced also in the plans and programs already prepared by municipal fire chiefs and their advisors, not the least of which are the increasing requests for architectural counsel and building designs and estimates.

Among students of the fire service it is generally agreed that the service is due for a pretty thorough going-over, with particular emphasis on the questions of housing, living conditions and creature comforts for personnel. This was true even before the war practically stopped all construction in the service and it is doubly true now, and will be after the war, because of the many and far-reaching changes that have taken place in most of our municipalities that have felt the full impact of wartime production, with its shifts in population, zoning, and living conditions. As we have seen by the studies, there is an immediate and post-war need for new buildings, and improvement in old structures throughout the country. It would be regrettable if this construction did not represent the most forward thinking in every detail, location, size, design, materials and so on. Surely the fire service doesn't want to make the mistakes that were made "way back when" by permitting architectural monstrosities to be erected without consideration of the needs of the fire service, the surroundings in which the structure will find itself now and perhaps fifty years hence and its place in the municipality's overall scheme for improving and beautifying its public works. One has only to look at the fire stations in the majority of our communities to appreciate the fact that most of them are not only architectural eyesores, but no longer meet the needs of the fire service, measured by modern efficiency and living standards. If we are going to embark upon a post-war building program in the fire service, having first developed the fact that there *is* a real *need* for new, or reconditioned structures, why not set our sights high? Why not enlist the best possible brains in the architectural and building fields, and the cooperation and advice of experts in the fire service, or related to it, who can intelligently pass upon the plans and designs, in fact, the entire building program? The National Board of Fire Underwriters, Factory Mutuals and equipment manufacturers are only too pleased to cooperate at all times.



Proposed New Station for West Roxbury, Boston, Mass.

Some Questions of Location

We have mentioned the changes that have occurred in municipalities, particularly those that have felt the full effects of large-scale war effort, with shifts in population, industry and changes in living conditions generally. How permanent and lasting will be these changes? How will they relate to the fire service in the years to come? Any comprehensive building program should be predicated upon not only present conditions but consideration of possible future developments. It is well to remember that possibly a majority of existing municipal fire stations are located today just where they were back in the days of horse-drawn apparatus. Yet cities have changed since that era—changed topographically, geographically and otherwise. Today, areas that were formerly considered "suburban" are now thriving segments of municipalities; other areas that were "zoned" or "restricted" for residential occupation are today given over to apartments, multiple dwellings, commercial, and even industrial occupancy. In the swift pace of wartime, zoning and other restrictions and regulations usually go overboard. All of which has a bearing on protecting communities against fire and on developments in the municipal fire service. Unfortunately, not all cities have been able to readjust the layout and other details of their fire service to keep pace with these changes. Today, fire companies originally located and equipped to fight fire in residential areas are being called upon to protect tall apartments, or large stores, or factories. Even if new, larger apparatus, necessary for adequately combatting fires in these hazards, could be provided, it can not be installed in many of the old fire station without material alterations to them.

Cities Confronted with New Problems

Many cities have found themselves confronted with problems which were never anticipated and which have grown out of the changed traffic conditions. Some have been unable to adapt their fire services to these changes created by modern motor car and truck transportation. Fire stations that years ago were located on little-traveled streets have, almost overnight, found themselves on

heavily traveled arteries, complicating the response of the company apparatus and lowering the working conditions of the firemen; few firemen can secure sound restful sleep with heavy motor traffic rumbling and roaring by the fire house all night long.

Many factors bear upon the question of locating the fire station of other buildings: land values, topography (hills, grades and obstacles), geography, coverage of hazardous areas, architecture of the neighborhood, building restrictions, necessary size of the structure, available funds for land and buildings, who and what will be housed (purpose of structure) and so on.

In our consideration of post-war developments, let us not repeat the mistake of years ago, so peculiar to volunteer fire departments—of locating the fire stations or "halls" with little regard to fire fighting efficiency. The National Board of Fire Underwriters surveys have disclosed many communities where, whatever might have been the original reason—fire houses are found located within a block or two of each other, in some instances several stations being bunched in a narrow area of a few square blocks, and in others on the very borderline of their communities, where response by those companies to alarms of fire can be in only one direction, and their protective efficiency consequently greatly reduced.

It would seem in order for a recheck and recount, to establish the necessity of our fire stations according to efficiency standards. Many cities are already doing it. Many, like New York, have found they possess large tracts of real estate which are inefficiently used by the fire service; for example, an engine company will have its own station on one block and a block or two away a truck company will be located in its own independent quarters. "Streamlining" is going to reshuffle many such setups, with consequent reallocation and combining of companies, and redesigning and conversion of many fire stations.

Location, or site, is a vital detail in the planning of fire department buildings, particularly company fire stations. Location should be so that the utmost fire fighting power can be delivered to the worst hazards in the quickest time. In suburban areas, it is always good judgment to place a fire department building at a reasonable height above street or highway level so that storm water will not prove a nuisance. Direction and speed of traffic on the thoroughfare must also be considered.

Sites should be selected having sufficient land for any future, as well as immediate, fire department needs. If low or medium value property can be found that will not mean sacrifice of efficiency it should be selected in place of high value property, because civic improvements depend upon income from land, and it might be better for the community to use the property in question where it will be more productive.

A question that bears upon location is centralization or decentralizatioin of fire forces. Should they be centralized in a "central house"? Or should they be located at what is believed the most strategic points of the community? This is a detail which must be solved only by careful, thorough study and analysis, preferably by experts. The blitz in England has demonstrated the value of proper decentralization. Too, in this country, we have seen central firehouses burned, with all the community's fire apparatus, because of too great concentration. Whatever policy is adopted, it is well to think of future conflicts, in which, if they come, destruction by fire will undoubtedly be the first thought of the enemy.

It may not be so difficult to secure satisfactory sites as some believe. At present, many communities own lots that have been taken for taxes. One thing is imperative, selection should not be made on a basis of political or other expediency; secondly, the heads of the fire service of the community should have a decided voice in both the selection of the land and what is put on it.

Planning Fire Service Buildings

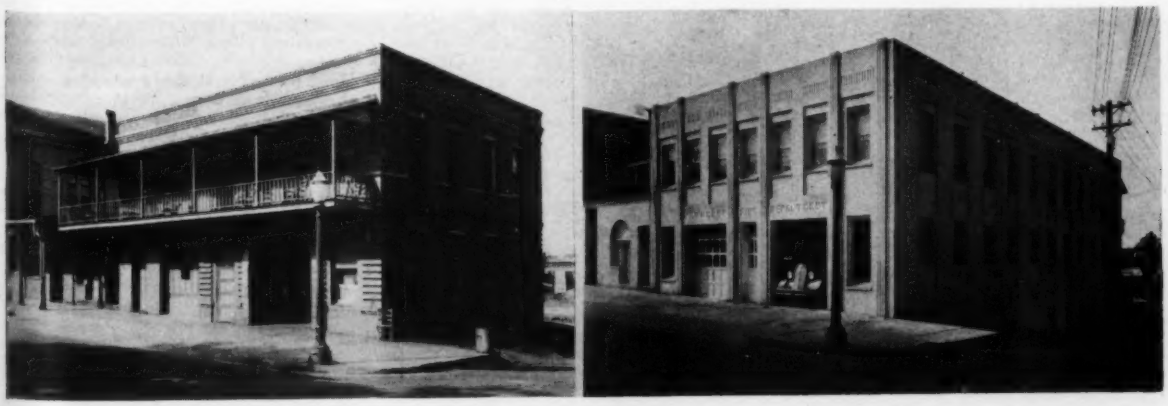
It is the prevailing belief among architects who have served fire departments, that a fire department building should be a separate, independent civic "institution." Sometimes it is preferred by local authorities to house police, electric service units, auditoriums, libraries, "town halls" or community meeting places, along with the fire station. Economy may in some small villages and towns dictate such a need, but if at all possible, the fire station or fire headquarters should be "sufficient unto itself." This suggestion is advanced with due appreciation of the fact that in some small communities the fire hall or station is the focal point of communal activities. Nevertheless, meetings, political or otherwise, should not be linked to the business of fire protection and fire fighting. At the very start of the building program, plan to divorce them by setting up the fire department, and all its stations and buildings (with the possible exception of the repair shop, which in some cases must be used by police and other civic interests), independent and separate all other local services.

Function of Building Important

In order to plan a fire station it is first necessary to thoroughly understand just what the building in question is for, what it is to do, and how a particular design and type of construction can best enable it to perform that function. In this connection it might be well for local officials to study fire department buildings of other communities. Many fire chiefs have individual ideas on the form the building should take, and how it can best house and sustain personnel and apparatus. Many have evolved ideas which other chiefs could well afford to adopt. Many have gone "all out" the *wrong* way and it might be just as well to discover what *not* to do as what to *do*.

While we are on this subject, there is another thought worth remembering. If the structure is to house a fire alarm bureau or communications headquarters, it is highly advisable to consult with the chiefs of communications. Location and type of building are more important in designing and erecting a fire alarm headquarters than in any other type of fire department structure. The successful fire department is the one that has complete coordination of all its components, communications, fire fighting units, and the cooperation of heads of all respective branches. The superintendent, or head of communications, and automotive power (the shops), and of the administration branches of the department, all have ideas. It is well to enlist their cooperation, both to cultivate those ideas and to improve departmental morale.

The planner of a fire station (or other structure) must have a knowledge of the kind and extent of the equipment to be housed therein, the number of personnel that will be required now and possibly



Fire Station Has Its 'Face Lifted'

Post war construction will accent modernization of outmoded fire stations. Here's how Newberry, S. C., central station looked after being "stream-lined."

later, before he can lay out the details of sleeping accommodations, toilet facilities, shaving and bathing necessities and so on. Is the three platoon system to become universal, and if so, will it relegate sleeping rooms to the past? Should cooking facilities be provided? And if so, where—and how extensive or how simple? And what about hose storage and drying? Should there be a tower, however unsightly, or more modern drying racks or other systems? These are just a few of the questions that the planner must weigh carefully, and to which he must find the right answers.

To these elements, must be added consideration of communications systems which naturally must be in line with the system in use in other fire stations. If a complete new system is to be installed, along with possibly a new communications headquarters, it calls for more expert knowledge and consultation. Radio is coming into the fire service picture on a large scale; the question of locating the radio station's aerial — providing of course the department is fortunate enough to have and operate its own station, may make or break the system. If wired alarm system from headquarters to station are used, as is the prevailing practice at present, with or without radio, circuits will want to be brought in underground, in accordance with approved regulations and recommendations. The planner must overlook none of these details.

Necessary Facilities

Finally, let us consider, briefly, some of the debatable necessities that are needed in a fire station:

First, the basement. Should recreational facilities be located in the basement—in fact, should these be provided at all. The answer is definitely yes, even if their extent and location are debatable. We have seen fire station basements used for almost every purpose under the sun, from serving banquets, to holding fire district and other meetings, to pool, bowling and pistol shooting. One wonders if those fire chiefs in the torrid states who never have to wrestle with heating systems, aren't rather fortunate in that no demands will ever be made upon them to "convert" their basements into "this, that and something else." Fortunate, also, is the chief who can restrict his basement to its primary functions, housing of the heating plant, possibly air conditioning unit; lighting switchboards and related facilities. Of course if there is no other place for recreational facilities, expediency may require their being located "below decks."

Next, let us consider the first floor. Here is where architects and planners have gone so wrong in the past. Not only do we find fire houses with hardly enough floor space to accommodate the apparatus at the time they were built, but so limited in area that the addition of a vehicle such as a small chief's car gums up the whole works. Ample floor area for present, and possible future apparatus is a prerequisite in designing any modern fire station. After this comes absence of obstacles—uprights, radiators, stairways, drying racks (if possible) and anything that impairs the maneuverability of the apparatus and movements of men. The relation of stairways, sliding poles, entrances and exitways are important. Men should not have to cross the path of moving apparatus in order to reach their own. There should be no crowding of men at top or foot of sliding poles, or stairways. The "watch desk" should be located to give the man on watch clear vision of the apparatus floor, doorways and, if possible, the front of the station, as well as concentrate within arm's reach all elements of communication and not in the dead center of the apparatus floor. It should be sound proofed.

In some stations it may be advisable to arrange classrooms, recreation rooms, storage rooms or even dormitories on the same floor with the apparatus. This is the practice in those warm climates we mentioned, where sliding poles, and stairways are seldom needed and ample room is available for one-floor operations.

Lighting of course is another important factor. Not only the type and kind of illumination, but the possible automatic features that may be desired to cut lights on and off throughout the entire station, as well as first floor. Right here it might be well to mention another detail—in planning for future stations, give further thought to blackouts! The nation's fire forces are still suffering from the headaches caused by the necessity of blacking out fire houses, with their large windows and glass section doors. God grant that it never come, but let's be prepared for another war and profit by the lessons learned from this.

Toiler rooms should always be on the ground floor—another detail to keep in mind. Apparatus doors, should never be less than 10 feet in width, and 11 feet is better. It may be remembered that the advent of the "cab jobs" and the high, all-metal trucks, created problems for many fire departments and resulted in reconstruction that never should have been necessary had fire station planners of old had foresight. Better add a foot or two extra width and height and play safe. Yes, and don't overlook foundations for that first floor! Who knows, tomorrow's two or three thousand gallon pumper, with its own thousand gallon booster tank is going to put plenty of strain on floor supports.

If there is any way you can dispense with the sliding poles—do it. They've caused more accidents than any other detail of fire station construction.

On the second floor, if there is to be such, ample room should be provided for lockers. And while we're on the subject—profit by the lessons learned from the past on lockers and locker rooms. Get 'em big, roomy, vermin proof—and preferably with their individual locks. Some day somebody is going to write a book on "fire department lockers" and the "dormitory" and "locker room." The planner of such features might well be a working fireman! Clothes racks, and boot racks for night hitches, toilet facilities (yes, even if the ground floor is best, it may be advisable to have them on this floor also).

In some departments, recreation rooms and libraries are preferred on the second floor. There is no quarrel with this, providing the details are thought-through.

Some Other Details

MACHINE SHOP: Many departments find it desirous to have a machine shop of ample size on the first floor adjacent to the apparatus room. This should not be too far from the apparatus and should include the fundamentals necessary to give "first aid" at least to all equipment.

WASHING FACILITIES: The first floor and its appurtenances should be planned to facilitate the oft-needed washing of apparatus. The floor itself should be waterproof, naturally, and properly surfaced. It should drain easily and thoroughly. Many departments use pits which enable firemen to inspect and get at the under-pinning of apparatus. Naturally, these should be safely covered and should not become collecting places for oils, greases, etc. as does the filling station's pit. Water connections and hose should be provided to facilitate quick, easy washing. This may also be used to fill booster tanks.

ELECTRICAL CONNECTIONS: Just as the old home was devoid of sufficient electrical outlets, so was the old fire station. There should be no need for endless light cord, trailing all over the floors. Trouble lamps, and charging connections should be provided, with cord possibly on tension reels. There is ample room

(*Continued on page* 592)

Fire Station 'Fits' Its Neighbo-hood

Architecturally, modern fire stations should adapt themselves to their surroundings. This "dwelling type" station, designed for Cotuit, Mass., carries out the "motif" of the residential neighborhood in which it is located.

Novel Military Dispatch System

By JOHN L. DOUGALL

WHERE is the fire? This is a question that does not have to be answered by the Camp Adair Fire Department located near Corvallis, Oregon. Chief A. L. Sherk, who learned his lessons well in the Portland Fire Department, put his years of civilian experience to good use at this army post. His recognition of the extreme importance of a fast and efficient system of control over his entire department resulted in this unique alarm system.

U. S. Army Signal Corps Photo

Dispatcher on Duty (Civilian) at Fire Alarm Headquarters, Camp Adair, Corvallis, Wash.

The fire alarm headquarters is housed in a one-story frame structure constructed from a salvaged Civilian Conservation Corps' portable barracks. It houses the Chief's office and fire extinguisher servicing room, in addition to the alarm equipment. The location has some exposure, but is situated near the cable center, sewer, water, and electric power facilities so as to conserve critical materials.

Above the alarm office door is an attractive sign which displays the red castle of the Engineers and the crossed flags of the Signal Corps. These insignia are symbolic of the co-operation and ingenuity of the Post Engineer's organization and the Post Signal Officer in creating, with the equivalent obtainable, one of the most outstanding fire-dispatching systems in the Ninth Service Command.

The spirit of helpfulness of the Pacific Telephone and Telegraph Company and the American District Telegraph in the installation of their apparatus was of material assistance in the successful completion of this project.

In placing the equipment in the building, ample working space was made available on all sides, and hinged doors provided for ready access to all terminals for servicing or testing. In designing the watch desk, consideration was given to utility and especially to the convenience of operation under emergency conditions. Thought was given to good lighting, an attractive interior, and proper heating and ventilation for the comfort of the personnel who are constantly on watch. When entering this pleasant office, an immediate impression of calm efficiency is evident.

The heart of the system is in two turret boards which were installed directly behind the watch desk at a height for chair operation. A third dummy board was provided for possible expansion, and directly above these were placed the visual annunciators. In these turret boards, all street box leads, telephone circuits to each fire station, and the four trunk lines to the telephone exchange terminate. The street box circuits, as well as all others, are of the supervised type and have automatic storage battery supplies. In addition, the central station has a stand-by generating set for current supply and emergency lighting. The lifting of the suspension type telephone in a street box or a dead short transmits an alarm and records the box number on the visual annunciator until it is reset manually. An open or grounded circuit rings a bell and actuates an amber trouble light which shows the circuit out of order until repaired. Loss of battery is also indicated both orally and visually. A foot switch was installed to provide silent operation of the boards. Two dial type telephones permit direct outside calls and are used for routine communications on the post. Approximately one-hundred calls per day on fire department business are handled through this office.

"Operator" is dialed to report a fire by telephone. The call is immediately transferred to the alarm office by "Central" over one of the emergency trunks to the turret board. These trunks trip a position marked FIRE printed in red on the visual annunciator. This notifies the dispatcher before answering that a fire is to be reported. "Central" monitors the call and sets up a pre-arranged sequence call arrangement for the notification of a required list of officials. This procedure is also followed by the telephone office on other than telephone alarms when "Central" is notified by the dispatcher that an alarm of fire has been received. Thus, the dispatcher is relieved of details, however important, at a time when quick action by him is necessary. Co-operating with him is "Central" who reports notice of the emergency to the proper authorities.

Location of Alarm Systems

The A. D. T. automatic tape receiver and control panel for the sprinkler and waterflow alarms and the automatic and manual fire alarm systems are located on top of the right wing of the watch desk for supervision by the dispatchers. A receiver on the hospital circuit is also installed in that district at station number five. This receiver is monitored by the firemen on watch at that station, but is not acted upon unless dispatched by alarm headquarters. If any failure occurs, this company rolls to the fire in answer to the alarm, and a prearranged procedure of control is immediately put into operation.

The center section of the watch desk, as all similar fixtures, was made of reject plywood and stained. This section is identical in every detail at all company stations. Such standardization makes it possible to transfer personnel to stand a watch at any station on the post without instruction as to the operational functions of that particular station. Facing the operator is the plug-out board which graphically pictures the status of the entire department at all times. The top of this board is beveled and painted flat black to facilitate reading of the punched tape and to guide it to the take-up reel mounted on the left, opposite the punch register.

Telegraph Key Provided

A telegraph key is provided on the desk for transmitting all coded signals to the stations. This instrument may be used to report companies in or out of service, as well as voice communication by the conference type telephone call on the turret boards.

The tape transmitter is installed on the top of the left wing of the desk, and relays and repeats three times the box number to all stations simultaneously where it is recorded on the circuit registers.

The master control switch for all the air raid alarm sirens is located at this office, and these sirens are tested every day at noon. Sirens are not used for any fire signals, but are confined to air raid or black-out alarms. The tape circuit is used to notify the department of an alert for an air raid or gas attack.

Directly under the transmitter are three drawers, each with its set of run-

ning cards. The master set is the standard Stevens assignment card system filed by street box numbers and "Phantoms." These carry company assignments for the first, second, and third alarms, move-ups, or changes of location for companies to cover-in. A list of the "vicinity" street boxes located in the district which might be used to report the same fire is shown. On the reverse of each card is shown a map of the route of travel or fire lane to be followed in answering the alarm and also indicating the hydrant locations near the box. This routing is a safety measure to prevent a collision between apparatus responding to the same alarm, and would be valuable in cities where traffic light controls are in operation or intersection signals are used. These master sets are filed in all stations and list the company assignments, indicating the order in which all alarms are to be answered and also designating the position to be taken by each company at the fire.

Phantom Box Numbers

"Phantom" box numbers are assigned to large buildings, hazardous locations, and intersections where an actual box has not been installed. These occasionally carry a larger assignment of apparatus and indicate an exact address or building instead of the usual street intersection, thus automatically expediting action on all special hazards.

The second set of cards is filed numerically by the A. D. T. alarm system numbers. These provide the dispatcher with definite information regarding the location of the fire and any hazards involved, as well as the nearest street box number which is transmitted by the tape transmitter. Any special information is passed on by telephone to the first company appearing on the assignment card.

The third set of cards is used for telephone alarms. This set is very important on an army post where troops are constantly moving in and out, and where the telephones remain in a fixed location. If a person reporting a fire does not know the building number or the street location, he may merely read the telephone number printed on the instrument to the dispatcher. These cards will give him the street box number to transmit and the exact location of the fire which is to be given by telephone to the nearest company to the location. This set of cards is checked periodically against the telephone change orders with the Signal Officer. A telephone moved to a new location in the same building is not reported as a change order for this record.

A three digit system was used in numbering the alarm boxes, and numbers were confined to the number eight or under to facilitate tape reading. They are arranged by zones in such a manner that a mistake of one digit in counting any one number on the tape would still place the company responding within one block of the correct location. Since never less than two companies are assigned to any box, one company would always immediately cover an alarm.

To assist in their knowledge of conditions on the post, certain aids were installed in the office by which the dispatchers could be informed of all circumstances which would affect fire fighting, fire prevention activities, and keep the department informed.

Water Pressure Recorded

Two gauges, recording and quick reading, were installed under the twenty-four hour clock on the north wall of the station. These indicate the hydrant water pressure and surge. All stations would be notified by tape signal to make only pumper connections in case of low water pressure. The water pumping plant is notified of low pressure and of all fire alarms by telephone; an emergency car is dispatched by them to the fire. Alarm service to the water pumping plant was not installed because of the distance involved and the need for conservation of materials.

The electrical department is notified by the alarm circuit and is furnished with a set of assignment cards; an emergency crew answers all alarms in a special truck.

Fire-weather information is readily available at all times. Meteorological instruments were furnished by the United States Weather Bureau and included a hygrothermograph and a wind velocity indicator which is installed on the desk. Readings are taken several times daily and recorded. In case of low relative humidity, fire prevention measures are taken immediately. During the fire season, the Weather Bureau telegraphs the fire weather forecasts daily.

Each station was furnished with maps of the camp showing, in color, the location of fire stations, street boxes, water mains, hydrants, details of sprinklers, water-flow valves, and automatic and alarm stations. These are posted in the watch rooms at all engine houses.

At the central alarm station, a fire map is maintained showing with colored pins the location of every alarm and indicating by color the type of alarm obtained from the daily reports of company officers. This shows where additional inspection or check ups on false alarms are needed. The information is used by the chief to assist in detailing the inspectors working out of the fire stations in each inspection district.

The master fire prevention inspector's file is regularly reviewed by the chief and the dispatchers, and all currently reported fire hazards and the dates and locations of large gatherings are noted and given special attention.

All fire hydrants are painted traffic yellow and are numbered on the barrel in black. An unusual numbering system indicates the approximate location of these hydrants and aids in reporting them out-of-service or damaged. Protecting posts are installed at most locations and are striped with yellow. White reflectors affixed on these posts aid visibility at night. Blocked streets are also reported promptly to all stations, and like defective hydrant reports are posted on standard black boards for ready reference.

Outdoor Telephone Boxes

The out-door mine type telephone box is used, being mounted on the power distribution poles at street intersections except where long blocks made intermediate locations necessary. It is possible to reach a fire alarm telephone without traveling over five-hundred feet from any spot on the post in the built-up area. The poles are marked by a twenty-four inch red band with a six inch stripe above and below. The box cover has inscribed on the door FOR FIRE ONLY. A standard street light was installed on each pole equipped with a fire alarm box and to the light was affixed a red skirt for night identification. These fixtures are very effective at Camp Adair as there are no red neon signs or red traffic lights to detract from their distinctive marking.

Very few false alarms are received and maintenance requirements have been at a minimum. The telephone type box

U. S. Army Signal Corps Photo

Assistant Chief Everett Moore, Camp Adair Fire Department, Corlvallis, Wash., in Charge of Fire Alarm Communications.

with the visual annunciator equipment has demonstrated its utility. It is an advantage to be able to talk to the person reporting a fire, and officers arriving at a fire may report conditions to the dispatcher or request additional help from any fire alarm box.

All circuits are in aerial cable on messenger for economy and as a precaution against air bombing. A separate pair of wires serve each street box, telephone, and station alarm circuit.

Provision for Two-Way Radio

Provision was made for the installation of a two-way radio directly under A. D. T. receiver. Radio equipment was installed at the rifle and artillery range headquarters where special fire fighting equipment is housed under command of a forest ranger. The control of burning grass and brush during artillery firing depends upon rapid communication to gun crews for the protection of the fire fighters, especially in the impact area. The fire alarm headquarters office has a direct telephone line to the range headquarters for calls if additional help is needed in that area.

A time and date stamp for the central station was not permitted because of war time restrictions and the temporary nature of the camp, as were several other refinements which would greatly improve a permanent installation of this type.

How System Works

This is how the system works. When an alarm of fire is received in any manner, one of the two dispatchers constantly on duty at the office pulls the master assignment card for the designated location. The operator at the turret board is informed of the number of the first company listed on this card to answer the alarm. Any special information is transmitted to this station by telephone. The second man sets up the box number on the tape transmitter and trips the sending key. The visual annunciator is then checked to see that all assigned companies or their alternates have responded. If any company fails to roll for any reason, the operator immediately dispatches another piece of apparatus until a full assignment has responded. These companies are then reported out-of-service by the use of the telegraph key so that it wll be recorded on the tape at all stations.

At each fire engine house as the first round of the box number is punched on the tape, it is read by the fireman on duty, at the watch desk. He pulls the corresponding assignment card from his file and if a company from his station is to answer, he turns two switches to the left of the plug-out board on the desk. The first switch connects the ten inch tap-out bell to the punch register and codes the box number on the second and third rounds of the box. This permits all the firemen at the station to have two chances to "read" the box number by listening to the bell so they may know the location of the fire. The other switch turns on the apparatus floor and dormitory lights. For a permanent peace time installation, these switches could be arranged with an automatic mark-time switch to actuate when the tap-out bell is tripped, and they would then turn out the lights after a fixed time had elapsed.

When the apparatus moves through the door, the fireman on watch raises and replaces the suspension type telephone on the left wing of his watch desk. This action records the station number on the visual annunciator above the turret board at fire alarm headquarters, notifying the dispatcher that the box number has been received and that the company has responded to the alarm. As the tape reports each company responding out-of-service, all stations then use their plugout boards to show the apparatus at the fire. This information immediately indicates what action would be taken by each company in service in case of a multiple alarm or in case a fire alarm is received from another location.

Apparatus rolls from the stations within thirty-five to forty-five seconds after a call has been received at alarm headquarters.

Low Fire Loss Maintained

This complete system of dispatching, and the centralized control it affords over the entire department, assisted materially in making possible the fine fire record established at this post in its two years of existence. Camp Adair is justly proud of having the lowest comparable fire loss in the Ninth Service Command.

Editor's Note: The problem of providing suitable fire alarm communications system for the nation's multitudinous military camps, depots, etc., in the face of priorities and other limitations, has been solved in many cases with typical Yankee ingenuity. Some of these installations, like the one described herein by Mr. Dougall furnish food for thought for communities not having municipal fire alarm systems, or where, for any reason, temporary dependency must be placed on the telephone, and such standard signaling equipment (transmitters, registers, etc.) as is available.

The author, a communications field engineer, was formerly administrative assistant to the Post Engineer at Camp Adair, and assisted in planning and installing the system described.

Civilian Fire-Fighters on the Beaches

The National Fire Service in Britain consists of the various local fire brigades in the United Kingdom, which were merged into one national service and expanded in the days of the blitz. It is a civilian body.

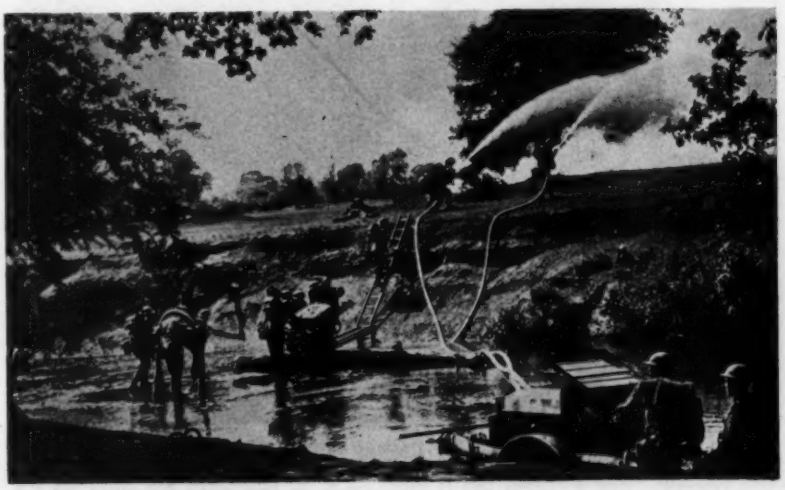
Prior to the landing in Normandy, units of the N.F.S. with their fireboats, prepared to take part in the invasion, as a reserve to the Army Fire Service. The crews, drawn from all parts of England and Wales, received special training for the operations. This included a toughening-up course, learning to manhandle trucks across difficult country and taking long route marches. They also learned to lay pipes for carrying water across country, and to erect improvised dams and build temporary hose-carrying bridges across roadways. Army officers were attached to the units to give instructions in camouflage, army law, discipline, and map-reading.

When D-Day came the fireboats of the N.F.S. went into action across the Channel. It so happened that they were not called upon to fight fires at sea, but they did undertake in the first two days of the offensive a number of important salvage operations for the Army.

They gave assistance to tankers and oil-carrying landing barges. One lifeboat, on the evening of D-Day, was called to the assistance of an oil-landing barge which was carrying a considerable quantity of petrol. It had been holed forward and badly damaged. The fireboat came alongside and, while a naval steam pinnace helped manoeuvre her towards the beach, began work pumping out. The barge was beached successfully, the valuable cargo saved, and the danger of the craft sinking in the fairway was averted. In other salvage operations these fireboats towed to harbor and pumped out ammunition-laden barges, and performed similar operations on fully-laden tank-carrying craft.

BRITISH INFORMATION SERVICES

Note: The operations shown in the photograph are similar to the work being performed by fire forces with the American Army in which OCD type trailer pumps are being widely used.



Members of the British Armed Forces Use Trailer Pumps on the Invasion Beaches

Presidio Military Center Has Efficient Fire Service

Modern Fire Department, Manned by Civilians and Soldiers and Well Equipped Makes Enviable Record

By BOB GREENOCK

THE largest military post within the city's limits in the United States, the Presidio of San Francisco, is well guarded from fire by modern apparatus and a crew of firemen consisting of both civilians and "G. I. Joes."

The Presidio, which has a historical background dating back before it was first fortified in 1776 by the soldiers of Charles III of Spain, is a wooded tract of 1,540 acres on the northwest side of the city where it borders the Golden Gate. Since the time it was chosen by Juan Bautista De Anza as military headquarters back in 1776, the Presidio has been occupied by Spanish garrisons, was host to Fremont's buckskin-clad followers, welcomed volunteers during the Spanish-American War, trained doughboys for service in the first World War and has played and is still playing a most important part in the present war.

In 1906, the Presidio became a haven for refugees of the great earthquake and fire who lived there in tents while San Francisco rose from the ashes. In 1917-18 it played host in an even grimmer manner, housing a concentration camp for enemy aliens.

The reservation is now headquarters for the Western Defense Command, of which Lieut. Gen. Delos C. Emmons is the commandant. Post commander is Colonel George Munteanu. The reservation, which includes sand dunes and heavily forested hillsides, contains barracks, warehouses, officers' quarters, a guard house, recreation centers, a hospital, aviation field, hangars and a lot of other things that are military secrets at the present.

Before the war Letterman General Hospital was the largest military hospital in the West and one of five Army general hospitals in the country. At that time it had 1000 beds, consisted of 56 permanent structures spread over 48 acres. Still in use is the old Station Hospital constructed in 1854 of materials shipped around the Horn.

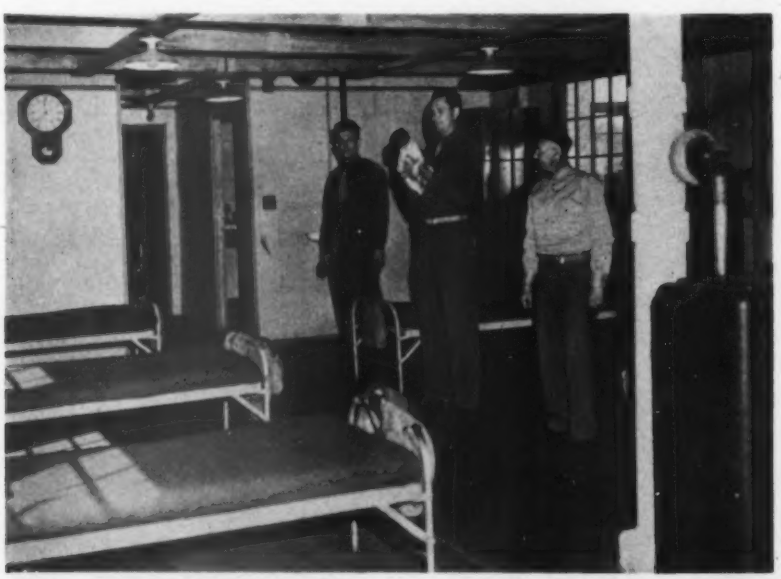
Civilians are still allowed to enter the reservation to go to the National Military Cemetery, subject to scrutiny and approval of MP's but what goes on in this military reservation in the heart of the most important port of embarkation on the West Coast is strictly a military secret. Needless to say, the greatly increased fire hazards brought about by wartime conditions are not non-existent at the Presidio.

Nevertheless, regular and continuous fire inspections have paid big dividends for there was only $15 fire loss within the reservation from October 1942 to October 1943.

Fire protection for the Presidio is under the direction of Fire Marshal (Capt.) J. T. Jones of the Port Engineers' Office. His assistants are Captain S. W. Muir and Lieut. Charles Middleton, also members of the Army's Corps of Engineers. They are responsible to the post commander for the fire protection and prevention service, a task not a small one.

Officers of the San Francisco Presidio Fire Department

Left to right: Captain J. T. Jones, Fire Marshal; Captain S. W. Muir and Lieutenant Charles Middleton Assistant Fire Marshals, and Fire Chief A. E. Miller.



Enlisted Men, Part of Crew Manning Fire Trucks at Crissy Field Station, Hold up "Smokey," their New Mascot in Bunk Room. Alarm Room and Apparatus Floor Can Be Seen through Open Doorways. Men in Picture, Left to Right are R. H. Edmondson, Bob Guillaume and Edwin Brown.

Heading the actual fire fighters is Fire Chief A. E. Miller. Miller, formerly captain of Engine 1 of the Oakland Fire Department, where he served 26 years, took over direction of Presidio Fire Fighting activities in July, 1942. He has a bit of military background, too, for he served in the Navy prior to World War I and was with the 102nd Infantry of the 26th Division (N. Y.) in France where he was wounded, receiving the Purple Heart. Modestly, he declaims being anything but a "buck private" in the war. He is married, has a daughter, 19.

Assistant Chiefs W. A. Wagner and William Dineen both hail from Omaha, both are retired captains of the Omaha Fire Department. Wagner put in 26 years, Dineen 25 before coming to the Presidio where the former has been for two years and the latter more than a year.

The chief, his assistants and all pump operators are civilians. Company officers and hosemen are enlisted men who work 48 hours and are off 24 in contrast to the 24-on-24-off worked by the civilians. Military police companies and headquarters troops form a huge reserve of man-

power for the fire department. The men are drilled constantly.

Alarm system used consists of Gamewell Automatic boxes augmented by a number of ADT boxes. In addition alarms may be given via telephone and companies dispatched by the same method. Each house is equipped with register and bell as well as a telephone. Headquarters station has a special alarm room complete with alarm equipment, a battery of telephones and siren control.

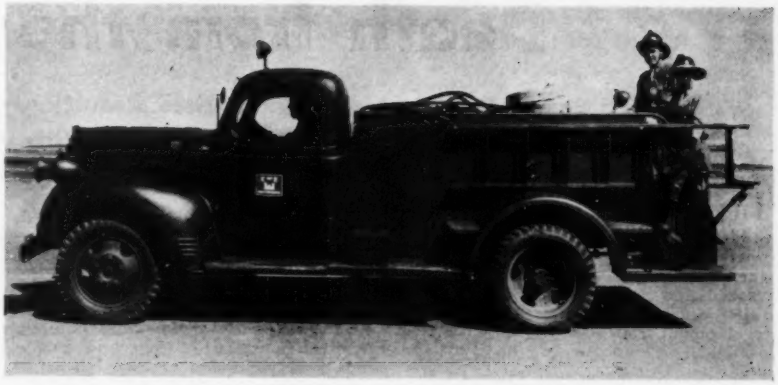
Assignment cards are used for alarm response which varies according to the location and hazard involved. Fort Scott, which is actually within the reservation, has its own fire department as has each of the other forts making up the harbor defenses. They are under separate command but have a mutual protection system which calls for moving up of companies on second or greater alarms.

Also within the reservation are four San Francisco city alarm boxes to which full assignments of city apparatus respond. They are located at the main post, in the warehouse area and two are at Letterman General Hospital. City fire equipment is also available for response to multiple alarm fires within the reservation.

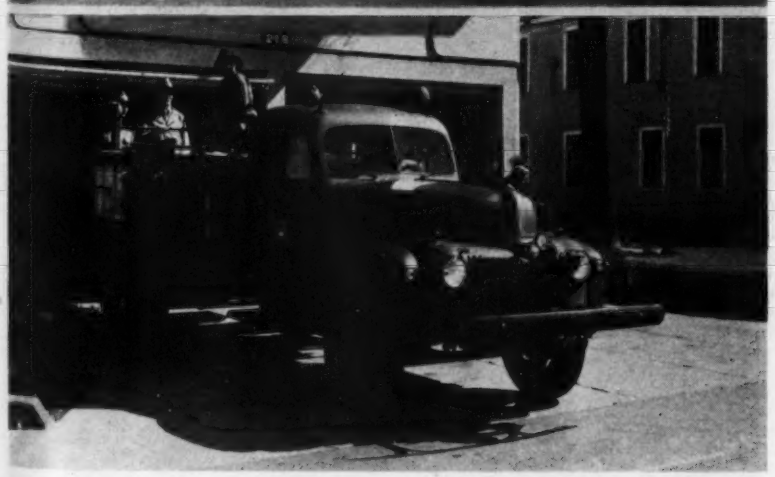
The Presidio has a large fresh water supply plus unlimited supply from the Bay through manifolds. The main reservoir contains nearly three million gallons of water. In addition there are cisterns spotted at points of vantage about the reservation, each containing 20,000 gallons.

While the apparatus does not carry much in the way of ladders, all buildings on the reservation are provided with fire escapes and ladders.

Several types of apparatus are used on the reservation, including pumpers, crash trucks and brush trucks.



Type of Crash Truck Used at Crissy Field, Presidio of San Francisco. Mounted on a Dodge Chassis, this Rig Carries Bean Fog Equipment, Puts out 60 GPM at 600 PSI.



Fire Equipment of Presidio Fire Department

Top: Chief A. E. Miller's buggy (left), brush truck, Peter Pirsch 750-gallon pump and one of the auxiliary trucks at the Letterman General Hospital fire station. Bottom: This brush truck, mounted on a Ford chassis, carried 325 gallons of water, has 300 gpm front-mount pump. Power take-off allows discharge of tank streams while truck is in motion. All trucks are equipped for operations in blackouts.

In Headquarters Station, for example there is quartered a Holabird truck equipped with a Hale 750-gpm pump. The truck carries 1100 feet of 2½-inch hose, 300 of 1½-inch, a 35 and 24-foot extension ladders and a 12-foot roof ladder. It is also equipped with a 125-gallon water tank equipped with a power takeoff which will deliver 35 gallons a minute, a 250-foot reel of one-inch hose, fog nozzles and other equipment.

Other pumpers, some of them Hale pumps mounted on Ford or Chevrolet chassis, carry much the same equipment, deliver 500 gallons per minute. Other makes such as American LaFrance and Peter Pirsch are also used. Most of them carry 300-gallon water tanks.

Several brush trucks, specially equipped for fighting brush and incendiary bomb fires, have been installed.

The crash truck at the Crissy Field Station is typical of Army type crash trucks. It is mounted on a Dodge chassis, carries 300 gallons of water, has Bean fog equipment that enables discharge of 60 gpm at a pressure of 600 pounds per square inch. It carries two reels of high pressure one-inch hose, foam and CO2 equipment as well as other apparatus. Crash truck crews have been specially trained to fight plane crash fires.

Auxiliary pumpers consisting of 500-gpm Chrysler-powered, skid-mounted Hale pumps on either Chevrolet or Ford Army truck chassis are held in reserve. The one at Letterman Hospital Station, for example, carries 700 feet of 2½-inch hose.

Because post sirens are used as air raid warnings, no sirens are sounded by the apparatus in responding to calls within the reservation.

Most stations have sleeping quarters on the apparatus floor level although the bunk room in the headquarters station is upstairs. Quarters stand frequent military inspection and all those visited were as neat as the proverbial pin.

Most quarters have day rooms equipped with radios and amusement devices, magazines and writing facilities.

There are men assigned to duty in the alarm office at headquarters 'round the clock and they are responsible for handling all still alarms and dispatching of companies.

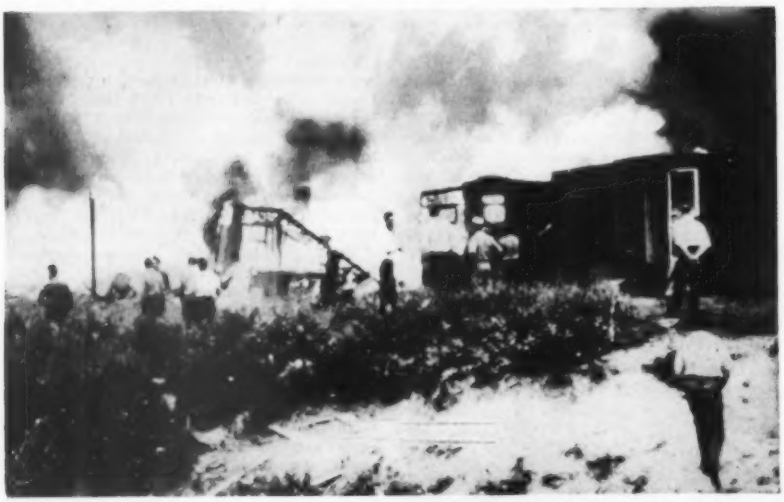
Apparatus and manual drills are held frequently and Chief Miller or his assistants make a tour of inspection every

(*Continued on page* 553)

Death from the Skies

Recent Airplane Crashes Resulting in Fatal Fires Provide the Fire Service With Warning

TWELVE persons, including several children, were killed and twenty-one others injured in South Portland (Me.) when a twin-engined B-26 Army Bomber crashed and exploded in the Westbook trailer camp, a 100-unit Federal housing development for war workers, located less than a mile from the Portland municipal airport.



Army Bomber Hits Trailer Camp

Twelve persons were killed as a result of a fire and explosion caused by an Army plane crashing into a war workers' trailer camp in South Portland. The ship's burning wreckage touched off a number of 50-gallon gasoline drums set in front of the trailers for heating purposes.

Fifteen seconds after the plane had appeared over the airport, at which time the pilot asked the control tower for directions, it came down out of a thick overcast, crashing in a gully below the trailer camp embankment, then flipping over the embankment, it slashed through three rows of trailers, spraying them with gasoline and oil which quickly ignited and exploded, trapping occupants of many of the trailers. Eighteen of the flimsy structures were consumed in a few minutes; twelve others were damaged. Parts of the plane were scattered over 100 yards. One of its motors ripped through a trailer, narrowly missing a mother and her child who were lying on a couch.

A lightning storm at the height of the fire aided the fireman somewhat, but at the same time made the work of recovering the victims more difficult. The injured were rushed to the Maine General Hospital, Portland, several in critical condition. It was some time before the dead could be identified. The body of the pilot was found in the wreckage but was not burned. The plane carried a crew of only two men, both listed as casualties. South Portland and Portland firemen brought the fire under control. They were aided by police, Red Cross mobile unit workers and an Army detail.

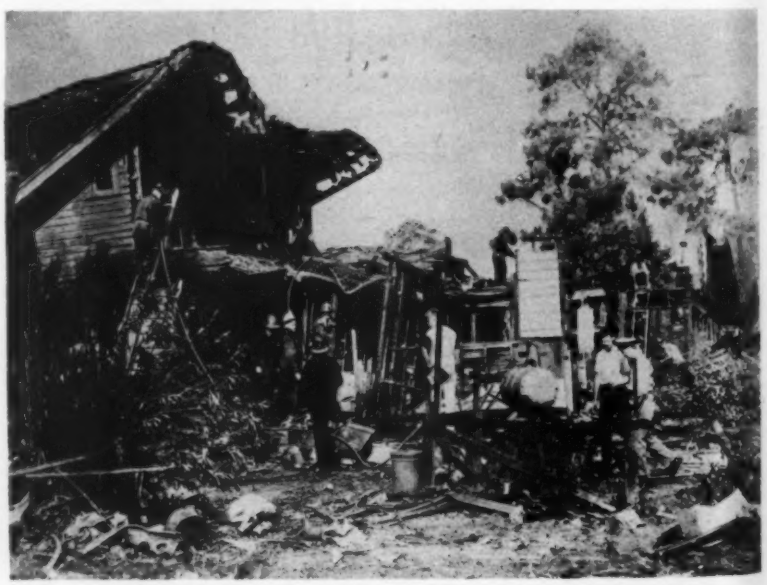
Three Killed in Johnson County, Kansas, Crash

Another July catastrophe occurred in the Merriam District of Johnson County (Kans.) when a 4-engined Liberator bomber after flying low for some time over the housetops of the section crashed into a residential area and burned destroying or damaging five houses, killing three and badly injuring three more of the crew. Three civilians were less seriously hurt.

The big plane was reported on a routine flight. Some accounts state the pilot was "buzzing the area" because he had a relative residing therein. At any rate, one wing struck the top of a tree, after which the plane went crashing crazily through other trees, knocking down power and telephone poles, slicing off housetops, until it plunged directly into the house of a Mr. and Mrs. Gray and exploded. Within a few seconds the structure was enveloped in flames. Mrs. Gray, the only occupant at the time, was burned in her attempt to escape which she accomplished via a broken window.

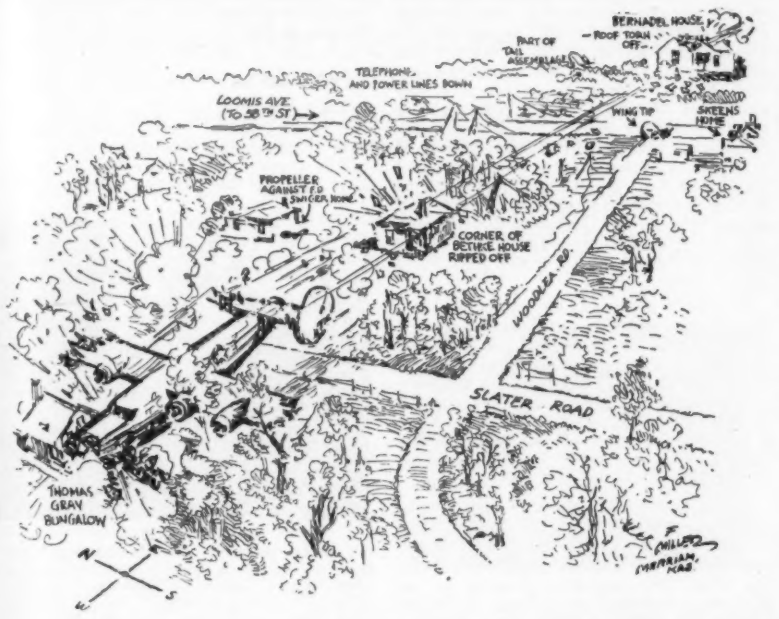
Prompt action by persons who witnessed the crash — including several young people—resulted in the rescue of the injured crewmen. The rapid spread of the fire, and exploding ammunition however, made it impossible to immediately extricate all the victims.

Firemen from both Kansas Cities and from Shawnee Township were summoned and confined the blaze to the single house, and wrecked plane. They also safeguarded other structures which were threatened by fire after being showered with gasoline and oil and parts of the plane. The area was roped off and wrecking crews from Army bases were sent to salvage the remnants of the plane and ammunition. Much of the latter—unexploded—found its way into the hands of boys of the neighborhood, adding to the worries of fire and police services.



Army Planes Crash into Homes

The wreckage above resulted from two army planes crashing into several homes in a West Jacksonville, Fla., residential section. Two homes were destroyed completely and sixteen others damaged.



Courtesy of "Kansas City Star"

A Graphic Picture of the Course of the Liberator Bomber Which Crashed in the Residential Section of Merriam, Kans.

Chief John Waas, Inter City Fire Department, Fairmount Station, Kansas City, Mo., to whom we are indebted for the detailed account writes: *This incident created much conversation in all the adjoining counties. I have shuddered to think of such a disaster occurring in our district, a suburb of Kansas City, which has a great deal of air activity.*

Some Conclusions

Although detailed fire department reports are lacking, it would appear that several conclusions may be drawn from the initial accounts of these crashes.

The first is that, as the fire service has long suspected trailer camps such as that in South Portland, may constitute a serious fire and life hazard. No matter from what causes a fire may start, if given sufficient headway the spread will be rapid and if any trailers are occupied, rescue operations may be difficult, if not impossible.

Next, concentration of civilians, especially in temporary housing developments, near busy airports, is hazardous. Also, it goes without saying, is low-flying or "buzzing" inhabited areas by airmen. The Army has ruled against this, but the regulations appear to be frequently broken.

The mistaken idea that planes, far removed from the coastline and battle areas do not carry live ammunition, should be discouraged. It should be assumed in any crash of an Army plane that it is carrying ammunition and/or pyrotechnics. If the occupants of such planes can be removed, as in the Johnson County crackup, through prompt courageous action, before the flames can get to the victims or the ammunition, it may be well worth the risk to make the effort. At all events, these and other crashes, which appear to be on the increase, illustrate the need for further education of both the fire service and civilian population on how to meet emergencies of this kind.

Presidio Military Center Has Efficient Service

(*Continued from page* 551)

day. Violations of fire rules and regulations are reported to the Fire Marshal who takes prompt action to see that they are abated immediately.

Companies are assigned to special duty at times, especially when a military operation of hazardous nature is under way.

While the alarm system is old and not as fast as systems installed more recently, response of companies is very speedy despite heavy traffic, hills and narrow, winding drives. Frequent test runs are made, boxes being pulled by the Fire Marshal or Fire Chief without previous notification to companies involved.

In one such instance while this reporter was present, three companies from two stations, responding to a box alarm in the hilly, residential section and more than a half-mile from either station, had lines laid, charged and were throwing water in less than two minutes. The first company, a light pumper roared up to the scene of the "fire" just 40 seconds after the box was snapped.

The fire fighting forces at the Presidio, together with those of the harbor defense forts, the Port of Embarkation apparatus at Fort Mason and the Coast Guard Fire Battalion, provide a mighty assemblage of well-trained men and modern apparatus with which to fight a peacetime and wartime enemy, fire.

WPB Rules Relaxed on Some Brass Goods

Restrictions on the distribution of fire protective, signal and alarm equipment, and on the metals that may be used in their manufacture have been relaxed, the War Production Board announced on July 13.

Order L-39 as amended permits the use of copper and copper base alloys for specified parts of equipment, chief among which are hose line fittings, expansion rings and fire hose couplings in sizes other than 1½ inches and 2½ inches.

This return to copper and copper base alloy is permitted chiefly because of the shortage in the supply of malleable iron castings, WPB officials said. At the same time these resubstitutions will permit the filling of essential orders which hitherto could be filled only by appeals from restrictions on the use of copper and copper base alloys. The resubstitutions will also result in a more satisfactory product and effect substantial savings in manpower, officials explained.

Signal and alarm equipment costing less than $200 is exempt from restrictions on sale and installation. Formerly only equipment costing less than $50 was exempt. It has been found, WPB officials said, that systems costing less than $200 are simple in design and do not require any appreciable quantities of critical materials or components.

Signal and alarm systems costing $200 or more may be installed only to fill military orders and those orders which are authorized by WPB either through approval of WPB Form-1319 or through approval of construction projects (Form GA-1456) where this equipment has been specifically requested.

The cost of the equipment is defined as the installed cost to the purchaser. If the equipment is leased instead of bought, the cost is determined by the price which would be charged if the equipment were sold outright and installed.

Brass Couplings Released

Principal other changes made in L-39 follow:

Brass fire hose couplings owned or controlled by manufacturers or distributors as of April 27, 1942, are no longer frozen. These couplings were frozen when L-39 was originally issued to take care of military and other urgent needs. Only a few odd lots are still in the hands of manufacturers and distributors. These may now be used or sold without restrictions, it was stated.

The definition of signal and alarm equipment is broadened to include all types of equipment or systems designed for protective purposes, except air raid warning devices. All types of paging and call systems, such as doctor and nurse call systems and factory paging systems (but not inter-communicating systems) are specifically added to the items covered by the order.

Chief Edward Welch Returns to Active Service

Edward P. Welch has returned as Chief of the Columbus, Ohio, Fire Department, following his honorable discharge from the Army as captain. He replaces Clarence W. Ogborn, who resumes his former rank as assistant chief.

Record Breaking Laying of Emergency Water Pipes

The editors of FIRE ENGINEERING are in receipt of a communication from Mr. D. W. Bates, Fire Force Commander, Fire Force 21, National Fire Service, Swansea, England.

Mr. Bates encloses photographs of the unique operations which he is called upon to perform and writes as follows:

National Fire Service Photo

Engine Tool Developed by the British to Speed Emergency Pipe Laying.

"I was very interested to read in the issue of "Fire Engineering" for April 1944, an article beneath the caption "Steel Instead of Rubber Hoses?", which reported a certain experiment made in the use of 6" steel piping by a Fire Force in this country.

"As it happens experiments in fast pipe-laying as outlined in your article have been taking place for some time in the Fire Force under my command and I am attaching herewith, for your information and publication, should you wish it, a report on a recent pipe-laying evolution which took place in this fire force.

"That the practical rather than the speed factor is the dominating condition of efficiency in pipe-laying" was the view expressed by Fire Force Commander D. W. Bates, L. I. Fire E., of Fire Force 21, in congratulating his men from the Derwen Fawr Station, Swansea, on their execution of what is believed to be a record breaking drill. The Commander has always taken an enthusiastic interest in the achievements of this particular crew and has given every support to Senior Company Officer Israel the Area Water Officer, and Company Officer Fox, the Divisional Water Officer in their efforts to train the crew to the peak point of efficiency.

The drill involved the laying of 1,000 feet of 6" steel pipes, the erection of a 5,000 gallon Scaffolding dam and the passing of water through the line into the dam. It was felt that the exercise should be undertaken under the conditions which normally prevail, and so a kerbed section of the Mumbles Road, Swansea was selected on Wednesday, 19th April, 1944 at 09.00 hours.

At a given signal a crew of eleven men got to work laying the pipes and erecting a 5,000 gallon steel Scaffolding dam, and three stop watches began to check the time. The nine men at work on the line were disposed as follows: a driver for the pipe-laying lorry; one man mounted on the lorry; two men at the rear of the vehicle unshipping the pipes; four men engaged in jointing and the remaining one following the jointers and tightening the joints. The erection of the dam at the delivery end of the line was left to the other two members of the crew. In the phenomenally short space of 9 minutes the last nut had been tightened, and pipe-line and dam were in commission.

The explanation of the ease with which this feat was accomplished, probably, rests in a rather unique tool which has been invented and improved upon in the course of other drills. Starting as an Easylifting Lever, it has developed into a device by which one man alone can effect a joint, first bringing the pipes into alignment and then completing the joint with the victualic rubber and housing. The abutted pipes are brought into position when the jointer exerts pressure with his foot on the lever handle, and this allows freedom of work for both his hands to make the joint, as he stands astride the pipe.

National Fire Service Photo

British Firemen at Drill Lay 1,000 Feet of Six-Inch Steel Water Pipe and Erect 5,000 Gallon Steel Scaffolding Dam in Nine Minutes.

New Jersey Fire Chiefs Meet

The quarterly meeting of the New Jersey State Fire Chiefs Association was held in Harrison, N. J., on July 1.

The three principal speakers were the Hon. Harry M. Archer, Deputy Fire Commissioner of the City of New York, and honorary surgeon of the New York Fire Department; Roi B. Woolley, Assistant Editor of FIRE ENGINEERING, and Fred Shepperd, Editor of FIRE ENGINEERING.

Dr. Archer Receives Life Membership Badge
Reading from left to right, Commissioner Archer, Chief Charles Greenfield, President of the New Jersey Fire Chiefs Association and former Chief John Towey of Newark, N. J., and past president of the International Association of Fire Chiefs.

Honorary life memberships, including badges and life membership cards were awarded to Dr. Archer and Mr. Shepperd.

Fire Station and Apparatus Destroyed by Blaze

The one-story wooden fire station and all equipment of the North End Volunteer Fire Company at Wolcott, Conn., a suburb of Waterbury, was destroyed by fire on June 12. Cause of the fire is unknown. The loss, according to Fire Chief Joseph Lewandoski, would exceed $5,000.

The equipment included a pumper, a truck, 1,000 feet of hose valued at $1,000, and the department's records and furniture. The fire station was built in February, 1942, by the members of the Wolcott Fire Department.

So rapidly had the flames progressed before they were discovered that a company from Bristol, responding to the call for aid, were unable to prevent its spread. Destruction of the building was hastened by the explosion of gasoline contained within the apparatus.

The fire was discovered shortly after 3 P. M., by three members of the Fire Company who were returning from work. The pumper was purchased from the town of Litchfield in 1941 and the home apparatus was mounted on a truck chassis. 1,000 feet of new hose had been ordered for the Company but did not arrive before the fire. A new fire station will be erected to replace the one destroyed, according to Chief Lewandoski. The station and its contents was covered by insurance.

THOMAS F. MAGNER

DOMINION FIRE CHIEFS DISCUSS POST-WAR PROTECTION PROBLEMS

Over 300 Attend Annual Conference Held At Quebec City; Industrial Chiefs Recognized

APPROXIMATELY 300 persons—over 100 of them ladies—registered for the thirty-sixth annual conference of the Dominion Association of Fire Chiefs, held July 11 to 14, inclusive, at the Chateau Frontenac, Quebec.

The business program included addresses by Chief Esdras Lepine of Ste. Anne de Bellevue, Quebec, on the "Formation of Police and Fire Brigades for Small Municipalities"; Chief Emilie Bond, of Hull, Quebec, on "Fire Prevention" (Chief Bond has been a several times winner of the Dominion's Fire Prevention Trophy and this year tied with his big neighbor, Ottawa); A. S. Stead, President, Dominion Board of Fire Underwriters and President, Dominion Fire Prevention Association, on "The History of Fire Insurance with Statistics and a General Review of the Work of both Organizations"; Lieutenant-Colonel Crain, Commanding Officer, Canadian Army Fire Department, Ottawa, Ont., who told about the work of his organization; F. X. Ahearn, Deputy Fire Commissioner, Province of Quebec, on "Fire Laws and Fire Protection in the Province and Assistance to Small Communities in Securing Fire Apparatus, etc."; George Maitland, Victory Aircraft, Toronto, Ont., on "The Industrial Fire Chief and His Problems"; W. J. Scott, K. C., Fire Marshal, Province of Ontario, on "The Responsibility of the Fire Chief for the Safety of the Lives and Property of His Citizens with Special Reference to Recent Fires where there Were Fatalities"; and Chief Roi B. Woolley, Assistant Editor, Fire Engineering, on "The Problems that Will Face the Fire Service After the War."

A Fire Marshals' Forum was conducted by Deputy Fire Commissioner Ahearn, of Quebec, and an Industrial Fire Chiefs' Forum, by Chief George Maitland, of Victory Park Aircraft, Toronto.

Following the opening ceremonies, which were given in both English and French, with addresses of welcome by a representative of the Hon. Mr. Adelard Godbout, Prime Minister of Quebec, who was unable to be present; by His Worship Mr. Lucien Borne, Mayor of Quebec; and by Brigadier Edmand Blais, C. B. E. M. C., Military District No. 3, and replies to the welcome by Chief George Thibeault of Vold'or, Quebec, and Chief W. B. Williss of Outremont, Quebec, there were impressive ceremonies for the deceased members. Chief James Armstrong, Kingston, Ont., read the obituaries of the departed. Chief C. J. Defields, Windsor, Ont., read the report of the Committee on Memorials, and memorial addresses were given in both English and French by Canon Ernest Dumals and the Reverend A. Dawson Matheson.

During the conference there was a dinner given by the host chief, Rosaire Beaulieu and Mme. Beaulieu to officers and their ladies, and a luncheon given for the ladies at Lac Beaufort in connection with their visit to the famed Shrine of Ste. Anne de Beaupre and the Falls of Montmorency. A dinner meeting was also held by the Board of Directors to which the guests from the United States were invited.

On Wednesday afternoon a heavy rainstorm failed to mar the special boat ride on the St. Lawrence River. The climax of the entertainment was reached with a reception and luncheon for the delegates and their wives and friends, at "Spencerwood," the home of the

(*Continued on page 602*)

Secretary-Treasurer James Armstrong and Mrs. Armstrong, who recently celebrated their fiftieth wedding anniversary

Courtesy W. J. Scott

Chief J. J. O'Kelly, Eastern Ontario Flying School, R. C. A. F., St. Eugene, Ont., Past President of the D. A. F. C.

Fire Chief Rosaire Beaulieu, Quebec City, Host to the Association

Fire Chief W. L. Andrews of Sudbury, Ont., Newly Elected President of the Dominion Association

Courtesy W. J. Scott

Fire Chief W. J. S. Walsh, Cambellton, N. B., First Vice-President, with Chief Angus Mickie of Lachine, Quebec, Second Vice-President of the D. A. F. C.

Fire Marshal W. J. Scott of Ontario, Dominion Fire Commissioner W. L. Clairmont of Ottawa and Deputy Commissioner F. X. Ahern of Quebec, with two constables of the Quebec Provincial Police

Dominion Fire Commissioner W. L. Clairmont of Ottawa with Fire Chief E. A. Woods of York Township, a Past-President of the Dominion Association.

Fire Chief Gray Burnett of Ottawa with Fire Chief Emile Bond of Hull, Quebec, joint winners for Canada of the 1943 Fire Prevention Week Contest.

Manufacturers' Announcements

L. W. Graves Appointed Manager of Akron Brass

L. W. Graves, who for the last two and one half years has been connected with the Fire Prevention Section, Office of the Chief of Engineers, War Department, Washington, D. C., has been appointed Manager of Municipal Sales of the Akron Brass Manufacturing Company, Wooster, Ohio.

L. W. Graves

While with the War Department, Mr. Graves had considerable experience with high pressure equipment and helped develop the technique of fighting airplane crash fires.

Previous to being with the War Department, he represented the Fabric Fire Hose Company in the Middle West. He was also chief of the Rockton, Illinois, Fire Department and was a member of the International Association of Fire Chiefs for nine years.

S. W. MacKenzie Appointed Director of Purchases

Stanley W. MacKenzie has been appointed Director of Purchases of U. S. Rubber Company to succeed George M. Tisdale, recently elected a vice president and member of the executive committee of the company.

Mr. MacKenzie served in the 14th Infantry of the Regular Army during the first World War, first as a second lieutenant and later as a first lieutenant.

On leaving the army in December, 1918, Mr. MacKenzie became connected with the tire business as a salesman in Des Moines, Ia. Two years later he joined the United States Rubber Company organization in New Haven. In 1932 he became purchasing agent of the mechanical division at Passaic. Eight years later his duties were enlarged to include supervision of purchasing and inventory control at such plants as Bristol, Providence and Sandy Hook.

Mr. MacKenzie was made assistant to the director of purchases in 1941, which position he held until his present promotion.

American-Marsh Announces High Pressure Pump

American-Marsh Pumps, Inc., announces its new high pressure front mount fire pump, "GK-100," designed especially for crash-fire service where high pressure streams taking water from large booster tanks are desirable for driving fire away from the burning "ship." The company stresses the fact that high pressure is not a substitute for volume.

The "GK-100" mounted on a commercial truck will deliver approximately 100 gallons per minute at 500 pounds pressure, which it claims is adequate capacity for three high pressure fog nozzles at engine speeds equivalent to 40 miles per hour; 65 to 70 gallons per minute at 600 pounds pressure adequate capacity for two high pressure fog nozzles. Operating at pressures around 200 pounds, this pump will deliver 200 gallons per minute through a 2½-inch line using a 1-inch nozzle. It weighs 190 pounds installed.

M. C. Horine Returns to Mack Trucks

Return of M. C. Horine as Mack Sales Promotion Manager following his resignation from the War Production Board, has been announced by C. T. Ruhf, President of Mack Trucks, Inc. For the past year Mr. Horine had been research consultant to the director of the Automotive Division of the WPB with offices in Washington.

During the period from February, 1942 to June, 1943, prior to his WPB appointment, he was engineering consultant to the Quartermaster General, continuing to serve the Chief of Ordnance in a similar capacity after motor transport was transferred from the Quartermaster Corps to the Ordnance Department. Mr. Horine joined the Mack organization as an engineer in 1918 after serving as a second lieutenant during the first World War.

His connection with the automotive industry began in 1907 as a shop boy for a builder of marine engines and Dorris car agent in Los Angeles.

New Portable Electric Megaphone

A new portable electric megaphone, said to project intelligible speech under favorable conditions up to one half mile distance, has been announced by National Scientific Products Company, Chicago, manufacturers of electrical and electronic equipment.

Construction details include a megaphone cabinet, waterproof so that it may be completely immersed without damage. The amplifier chassis is shock-mounted to the top section of the cabinet and permits easy access to condensers, resisters and component parts for ready servicing or replacement. Speakers and microphones contain the new molded phenolic diaphragms which are also completely water-proofed. Batteries used are said to provide forty hours of efficient operation and still retain seventy per cent of original voltages. Power is consumed only during actual transmission of voice.

New Portable Megaphone

The manufacturer further states that the equipment has proved most valuable to police and fire departments and other protective organizations.

Further details are available by writing to National Scientific Products Company, 5013-25 North Kenzie Avenue, Chicago 25, Ill.

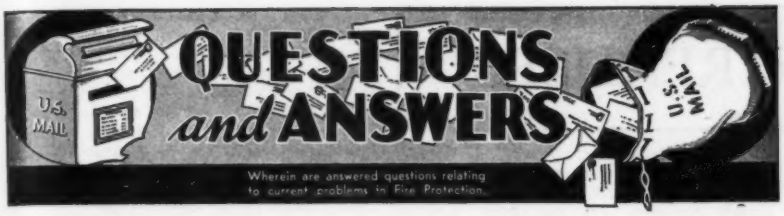
Federal Electric Awarded Army-Navy "E"

Federal Electric Company, Chicago, Ill., one of the principal manufacturers of sirens and signaling devices used by the armed forces, has been awarded the Army-Navy "E" Flag for outstanding production of war materials. The company was informed of the award by Mr. James Forrestal, Secretary of the Navy

(*Continued on page* 594)

New Pumper for Rochester, N. Y.

One of four "Invincible" 750-gallon triple combination pumpers recently delivered by the Buffalo Fire Appliance Corporation to the City of Rochester, New York. These are being strategically located to help give the busy industrial city of Rochester proper fire protection.



Placement of Ladders

To the Editor:

Should a fire department ladder be placed with the fly to the building or with the fly away from the building?

There are several arguments both ways. In my opinion the fly should go to the building, namely for the following reasons:

1. There is no danger of an "under-step" or "missing rung".

2. The fly rope is away from the building so the fireman raising the fly can gauge his distance or height correctly.

3. The regulation ladder with guides top and bottom is just as strong either way, the fly to the building or away from the building.

L. R. W.

Answer: A check of fire department instruction manuals shows that the vast majority of departments place extension ladders with the fly away from a building.

There are a few disadvantages to this method of using ladders, but apparently the manufacturers recommend placing the ladders with the fly away from a building, which has resulted in quite uniform adoption of this method.

In addition, a check of a number of photographs of ladders in use at fires, shows the ladder placed almost invariably with the fly away from a building.

"Teeter-Totter" Method of Resuscitation

To the Editor:

When I was at fire school this spring, I heard about the new method of artificial respiration called the "Teeter-Totter" method.

I'd like to learn more about this method. C. L. A.

Answer: Richard W. Thrush, Assistant National Director, First Aid, Water Safety and Accident Prevention of the American Red Cross, submits the following information on the "Teeter-Totter" method.

"The so-called "Teeter-Totter" or "see-saw" method has come to our attention in one form or another from time to time during the past few years. There is nothing especially new about it, and it depends upon mechanical equipment. So far as we have been able to learn, the studies that have been made by authorities on artificial respiration do not indicate any advantages over the prone pressure method which is accepted and taught throughout the country. It does have the distinct disadvantage of having to depend upon a certain amount of mechanical equipment. Whenever that is true there is always the tendency for those at the scene of an accident requiring artificial respiration to wait for or attempt to secure the required equipment. As is so well known, it is highly necessary that artificial respiration be begun at once, and there never is any occasion for delay by those who are trained to give the prone pressure method.

"So far as any mechanical devices are concerned, it is true that there may be situations such as in hospitals where something in the way of special equipment may be used advantageously under medical direction, but in emergency situations depending upon lay assistance, we so far know of nothing that is better than the prone pressure method. It is no more difficult to learn, is immediately available and is effective."

Combustion of Alcoholic Liquids

To the Editor:

Under the above title you describe, in your May, 1944, issue, the extinguishers effective for use on fires involving liquids containing alcohol. You state that "for extinguishing fires involving alcohol or alcohol and water mixtures, carbon dioxide gas, foam (specially designed for alcohol fires), carbon tetrachloride, or fog may be used with effect."

How about DuGas extinguishers? It is our impression that these extinguishers have been approved for this very type of fire.

I shall appreciate your comments.

M. T. T.

Answer: Yes, Dugas fire extinguishers, which have been approved by both the Underwriters Laboratories and the Factory Mutual Laboratories, are indicated for control of alcohol fires. Omission of this type of extinguisher in the answer to the question to which you refer was an oversight. Incidentally, the dry powder employed in Dugas extinguishers produces carbon dioxide, one of the extinguishing agents mentioned in the original answer to the question. In addition, water vapors is also formed when this extinguisher is used in operations on fires.

True and False

To the Editor:

Will you please answer the following true and false questions.

1. Heat from fire that occurs inside buildings is diffused by conduction and by convection.

2. Diffusion by convection is more rapid than diffusion by conduction.

3. Where a large volume of water is required, the reciprocating pump is almost universally used.

4. Pumps of the rotary type are well adapted for working over a wide range of speeds with comparatively low head and with widely varying discharges.

5. In the centrifugal type pump the discharge is more nearly continuous than in the rotary type pump.

6. In an old wooden building, fire on the top floor is more serious from a life hazard standpoint than fire on the lower floors.

R. J. M.

Answer: The following are the answers to the questions you have submitted:

1. True (although radiation also is responsible for diffusion of heat within a building).
2. True
3. False
4. False (This question would be better stated if the word "best" were used in place of the word "well." Rotary pumps are positive displacement pumps, and depend upon a definite gear ratio for their various speeds. They are not what might be termed "adapted for working over a wide range of speeds." Centrifugal pumps are better adapted for this purpose).
5. True
6. False

Solving for Nozzle Pressure And Discharge

To the Editor:

What is the nozzle pressure and discharge in each of the following layouts.

Layout No. 1. A 500-gallon rotary pumper is pumping through 1800 feet of 2½-inch hose down a 40-foot grade. Hydrant static pressure is 48 pounds.

Layout No. 2. Using the same pumper but stretching two parallel 150-foot lines of 2½-inch hose siamesed into a single line 1650 feet in length.

Layout No. 3. Using the same pumper but stretching two parallel 500-foot lines of 2½-inch hose from hydrant to the pumper and then laying 1300 feet of 2½-inch hose equipped with nozzle from the pumper.

E. F. M.

Answer: The solution to the first problem is as follows:

Assume the 40 foot drop in the hose line due to grade, applies in each problem.

This 40 foot drop represents a gravity pressure of 40 x .434, or 17.4 pounds approximately. This gravity pressure aids the hydrant pressure, or the engine pressure where engine is used.

The corrected hydrant pressure, taking into account the gravity pressure, will be 48 + 17.4 = 65.4 pounds.

Rotary gear pumps use but a part of

(*Continued on page* 590)

WITH OUR READERS

A Visit to the Belfast Fire Brigade

To the Editor:

Here are some of the things I saw on my recent visit with the Belfast Fire Brigade, at Fire Brigade Headquarters, Chichester Street, Belfast:

The exhibition was devoted to a series of evolutions intended to show all the various appliances in operation, and performed by the crews of the various appliances (their word for apparatus so let's be Britishly precise in this).

The turntable escape rolled from quarters and into the courtyard, taking a position facing the building. The crew jumped off, set the axle load lock on the rear axle, swung out the road jacks and adjusted them, and in an amazingly short time the bed ladder swung up, and started to extend. The operation of the ladder from then on was very much like the control of an American type Hydraulic hoist aerial ladder, and very similar to the American La France. The big difference seemed to be that once the bed ladder was raised, the ladder was "plumbed" before being extended. This consisted of the bed ladder being shifted at the base to a vertical position regardless of the slope or angle of the turntable. Also the English ladder—a Merryweather ladder on a Leyland Chassis—was equipped with a telephone from the top of the ladder to the ground, a heavy hand-operated ladder pipe on the end of the ladder, with a platform just beneath it for the operator to stand on, and an attachment for the Longworth Rescue Device, a centrifugal braking device through which a rope travels, and which allows any person to travel safely and slowly to the ground.

The pump escape major is the English large size Engine of about 800 gallon size (in Imperial gallons, which is about 1000 U. S. gallons per min.) with the pump mounted on the rear, and a wheeled ladder mounted on a frame just above it. One drill was for the escape, and it was quickly dismounted, wheeled to the base of the building, and extended. One set of cranks controls the fly, and another crank controls the angle of the ladder, until it is extended to the proper height and brought in to the window. The ladder acted as its own counterbalance so that as the angle became greater, the ladder slid back on the cradle. Another drill was the pump operation and relay work. The suction lines, already hooked to the pump suction ports, were snapped onto the hydrants, the linen lines snapped to the discharge gates, and rolled out in the direction towards the supposed fire. The linen hose is very light, 2½" in diameter, with no lining, and kept rolled on the apparatus in about a 18" roll. The female end is in the center, with the two spring lugs of the instantaneous couplings forming the axle and the firemen just grab the two lugs lightly, and run, letting the roll spin and thereby laying the line. Thus the line is laid as fast as the man can run, but I think I still prefer a good old fashioned American "flying stretch." The pumps were started, the lines filled, and promptly leaked like a sieve their entire length, but nobody seemed to mind. Their nozzles, called pipes, were of the shutoff type, with the adjustable solid stream or spray tip idea, that they have been using for the past twenty years, and that we think such a new idea in the States The hose comes in standard 75′ lengths, each coiled separately and they grab as many coils as they need, one man extending his roll as the rest follow along, then the next length is snapped on and the line continues.

The "whippet" or small pump does not have the wheeled ladder but only a 35′ extension ladder mounted above the appliance. The pump was mounted amidships, with the usual hose body of the locker type and the men sitting on the top and each side. They put on a drill which was very much like that above. Also there were drills using the various types of heavy and light pumps on the grey machines that have been developed and standardized since the war started. A heavy pump is carried in the rear of a truck, with a Ford V8 motor. It is a good solid pump, but is quite top-heavy while on the road, so is not liked any too well.

Pipe-Laying Drill

The evolution that was entirely new to me was the pipe-laying drill. The crew was equipped with a heavy lorry of the tractor-trailer principle and very maneuverable, loaded with steel pipe, about 8" in diameter and varying in length from 18′ to 24′. The varying lengths are used to facilitate the laying of the pipe and to eliminate unnecessary cutting of the pipe which takes quite a bit of time. In the drill, the lorry rolled along slowly, and the crew jumped off, and first laid a large collecting section which is a short length of the pipe with four or six inlet ports, each equipped with a clapper valve. This laid, the crew quickly laid out lengths of the pipe in a rough line from the collecting section to the reservoir that they intended to fill. Two men also dropped off fittings at each joint, consisting of the rubber ring and two half-rings joined with a bolt on each side. When the pipe was roughly laid out, the crew returned to the first joint, and slipped the rubber ring around the end of one length, the second length was brought up snug, the half rings were brought around the ridges on each end of the pipes, the bolts were hand-tightened, and the crew went on to the next joint, leaving one man with a wrench to tighten the joint. They worked surprisingly fast, and in a very few minutes, had about 150′ of 8" pipe laid which ended in a piece sticking up in the air and over in an inverted "U" shape into the portable reservoir. A large pump was hooked to a hydrant, with the lines connected to the collector, the pump was started, and in a few seconds water was pouring through the pipe and into the reservoir.

Replaces Broken Mains

The drill was extremely interesting to me, and the Company Officers explained that the crews worked equally well in a blackout or over and under debris that may accumulate during an air raid. The crew can arrive on the scene of a break in a water main, and by shutting off the burst section at both ends, can connect hydrants to the closed mains, lay their portable mains, and connect the ends of the portable mains to the closed mains with hoses from the hydrants, and the supply of water goes on. Also, once laid, the pipe can withstand the damage and pressures of having buildings collapse on it, rather than having lines of hose ruptured. The crew once during a blitz in Belfast, laid a mile of this pipe in shortly less than six hours time, provid-

Allies Use Captured Fire Boats

These three fire boats, resting at low tide on the bottom in a canal in Normandy, are being put to use by Allied Forces after they were captured intact from the Germans.

ing an adequate supply of water that materially contributed to saving a large portion of the business district.

One thing more that is peculiar to their way of fighting fires: they have no iron fire hydrants on the curbs such as we are familiar with—they carry their fire hydrants on the apparatus! In the streets or on the sidewalks as the case may be, are iron plates marked "F P" for fire plug. The plate is lifted, exposing a male fitting and a square key. Their hydrants are brass or copper pipes, about 36" long, with female threads on the lower ends and a "Y" on the top. The hydrant is screwed on the fitting and in place, two lines are snapped to the top, and a long bar similar to our gas keys with a square socket on the end is fitted on the key, and turned, opening the valve and allowing the water to flow through the hydrant and the lines. Their average pressure on the mains is about 50 pounds. Of course, it is an art to be able to locate these plates on the street when covered by a parked car, rubbish, debris or their infrequent snow, so small blue and white enamelled plates about 3"x5" are fastened to the nearest structure, denoting the distance from that sign and the plate. Some of the signs are from 60 to 75' from the plates, so even at best, it's a job to find the right one. The blackouts add zest to the sport, so to facilitate matters a yellow ball and an arrow are sometimes painted on the wall of a building denoting the direction of the nearest fire plug. I have seen these signs and arrows close by fire plugs, and other times they are fastened to buildings at the second story, or maybe a lamp post, so to a crew that arrives in a totally strange area in a blackout under blitz conditions must really have to scratch to find the fire plugs! Huge static tanks have been built in abandoned cellars, or vacant lots, or any available location with more signs reading "EWS....gallons" posted in conspicuous places to make the job of getting water to the fire easier. It really is a good system.

Sincerely,
WILLIAM H. WALLACE,
Sgt., U. S. Army

A Pinch-Hitting Conference

To the Editor:

I recently returned from attending the annual conference of the Southwestern Association of Fire Chiefs. It was a good meeting, especially considering that it was the hardest hard-luck meeting I ever attended in my life.

First of all, three of their five states held their annual state meetings either one week or two weeks before the regional meeting. Then, nationwide publicity was given against travel in connection with conventions; this did not help any. Two of the states held their state schools within three weeks of the Southwestern convention date.

When we arrived in Little Rock we found our host, Chief Joe Carmichael, in bed, had been for several weeks with erysipelas, and was in misery. However, his organization was on the job and his first assistant chief, T. G. Sandusky, took over and did a marvelous job up until 9:30 of the first morning, when he was stricken with a heart attack and taken home. Second assistant chief H. D. Compton stepped in and he immediately was affected by a bad "charley horse." However, charley horse and all, Chief Compton carried through to the finish.

The Mayor was to give the address of welcome but was called from the city, as was the President of the City Council, so the City Clerk took over. He also acted as toastmaster, representing the city at the dinner, and in both cases did a wonderful job.

The Bishop was to give the invocation. He had to leave town hurriedly to attend a conference, so his assistant was assigned. He too was called away, so the second assistant appeared, gave the invocation and also the memorial address, and I must say it was one of the best I ever heard. They have a great bunch of pinch-hitters in Little Rock.

Chief Bob McAlpine did a good job of filling in, and made a fine presiding officer. President McAlpine opened the meeting, then he changed his hat and took over as secretary. You will recall that the secretary had a heart attack, so the president was filling in for the secretary. Then he made another change and read the treasurer's report. He is a triple-threat man, this man McAlpine.

The temperature was nearly a hundred, and two of the ice plants went out. I had been on the road three weeks without any clean linen. The hotel took all my shirts and lost them. I haven't found them yet. I am still without a clean shirt. I have lost my shirt at several conventions, but this was the first time I lost them all.

The attendance naturally was small, but what they lacked in number, they made up in enthusiasm. Chief Frank Smith of Eldorado, Ark., was elected president, and I believe the Association will go far with him.

Sincerely yours,
JAY W. STEVENS, Chief,
Bureau of Fire Prevention
The National Board of Fire Underwriters
San Francisco, Cal.

More on the Redwood Manufacturing Fire

To the Editor:

The enclosed picture of the Redwood Manufacturing plant fire in Pittsburg, Cal., was taken by Engineer J. McBride of the Antioch, Cal., Fire Department. He was at the scene of the fire when it broke and remained on duty for sixteen hours operating one of the rigs.

Fire departments from the Columbia Steel Company plant nearby, Antioch, Concord, Walnut Creek, Martinez and Camp Stoneman were summoned to assist the Pittsburg company. Pumpers from Camp Stoneman, Pittsburg and Martinez relayed water a distance of approximately three thousand feet from the river.

Water for the Antioch and Columbia Steel pumpers was secured from a nine-inch main at the steel works. At no time was there a lack of water.

The failure of the plant's water system was caused by the burning of power lines, rather than the breaking of water mains.

The main office, power house, much lumber and several barns and buildings were saved.

This was one of ten fires handled by the Pittsburg Department that day. At the height of the Redwood fire three fires occurred, one being in a hotel. Losses at these fires were held to a minimum.

Sincerely yours,
CHARLES SWEENEY, Chief
Antioch, Cal.

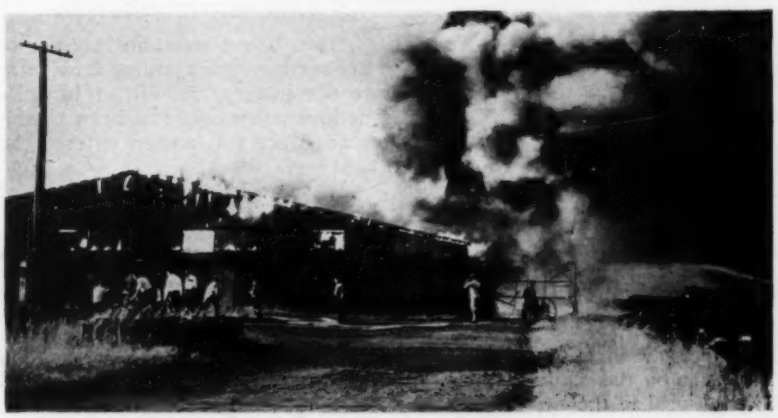
Educated Firemen Are Best

To the Editor:

Industrial plant firemen today must be trained in the latest modern methods of plant fire protection. They are taught resuscitation, rescue work, life saving, first aid and many other duties of personal service which they are subject to render at a moment's notice. First aid fire extinguishing devices must be thoroughly understood as to their limitations, advantages, etc. Heavy equipment such as fixed pipe systems, sprinklers, portable wheels, standpipes, hose houses and other equipment that make up the plant firefighting system must be understood In times of war, if near a target zone, firemen must be trained in passive plant protection, such training to consist of bomb reconnaissance, plant concealment, war gases, bombs, blackouts, panic, etc.

The best method of training these firemen is by using the Army motto, "Do it, and then you'll know how."

(*Continued on page* 590)



View of the Fire in the Redwood Manufacturing Plant

This is an additional photograph of the Redwood Manufacturing Plant fire which occurred on June 3rd, and which was previously described in the July issue of FIRE ENGINEERING.

For Practical Discussion of Current Fire Department and Fire Management Problems

FIRE SETTING BY JUVENILES

THE general unrest due to the war and the fact that parents are serving in the armed forces of the country or working in defense plants and cannot properly supervise their children, has increased juvenile delinquency in many of the towns and cities of the United States. One phase of the delinquency problem is fire setting, and while it is difficult to determine which of the fires set by children are attributable to juvenile delinquency and which are due to just plain carelessness, it is nevertheless true that fires involving youth are on the increase.

Many of the chiefs participating in this discussion report juvenile fire setting has not increased during the war years, while others report as much as a thirty per cent increase. However, most of the cities have experienced an increase in false alarms transmitted by children.

Many cities have recognized the trend and have set up programs to counteract the evil. Many chiefs believe the remedy is to keep the youngsters occupied. One department aids in the coaching of soft ball teams, another supervises the awarding of the Boy Scouts' firemanship badge and has organized a Junior Fire Patrol organization in the public schools. Other fire departments train speakers and send them into the schools and to address Boy and Girl Scout meetings.

In some localities when it has been determined that children are responsible for fires, the children and parents are called down to the fire chief's office where they are shown what it means to set a fire. Rarely does an offender set a second fire after such a session. Some chiefs believe that it has helped to keep down the number of fires set by children to stress how fires impair the war effort.

Readers are invited to send in their comments on this subject, which will be continued in the September issue. Address communications to Round Table Editor, FIRE ENGINEERING, 24 West 40 Street, New York 18, N. Y.

Discussion of the Topic

W. P. Payne, Chief, Spokane, Wash.: We have checked our records of fire setting by juveniles during the past five years, but we do not conclude from these figures that there has been any noticeable increase.

In 1940 there were nineteen cases of fire setting by juveniles; in 1941, thirty-five; in 1942, fifteen; in 1943, forty-two and in the first half of 1944, eighteen.

During the five-period 1935-1940, the average was considerably greater than since the war; therefore in Spokane, we have had a decrease of approximately thirty per cent, rather than an increase.

If smaller children are involved, we discuss the matter with the parents and children together. In the past a few fourteen and fifteen-year-old boys have been sent to reform schools through the juvenile court. The numbers of repeaters is negligible.

A deputy fire marshal has full charge of investigation of fires. In case children are involved the matter can usually be handled successfully through the cooperation of the parents and the fire department official.

I should like to tell my experience with the false alarm problem, so often associated with juvenile delinquents.

In 1936 juveniles were pulling ten to twenty alarm boxes a day, so we got worried about it. The trouble kept up for about two months without stopping. We assigned Inspector Edward M. Waye to visit schools and talk before all student body meetings. Instantly we had a slow-down and by the time he finished speaking before all schools, assemblies, civic clubs and organizations, which took about three months to conclude, we didn't have a false alarm.

From that time to the present, we haven't had more than four false alarms a year, which could be blamed on juveniles. I feel our campaign has been very successful.

Educating the public is the only practical method of control for such matters as false alarms, juvenile fire setting, and fire prevention of all kinds. Our most essential asset consists of an entire fire department that is fire prevention minded.

John A. McCracken, Chief, Gary, Ind.: We have not noticed any appreciable increase in fires caused by juvenile delinquency in Gary. We attribute this to the fact that our department recognized this as a potential war hazard before it became a fact and took steps to counteract it. We have acted on the principle that "an idle brain is the devil's workshop." And we have enlisted the cooperation of our civic and religious groups to help keep the children busy at something pleasant to them and profitable to the community and the nation.

Our public school system is built on the work-study-play system inaugurated by the late Dr. William A. Wirt, and is in operation ten months per year. During the summer special courses are given in the schools, not only on week days but on Saturdays as well. During the evenings two-hour classes are held for all those who wish to take advantage of them.

Our Mayor has also recognized the problem of child delinquency and has set up a number of recreational and athletic centers under the supervision of the Gary Park Board and the Youth Service Organization.

Our churches and civic organizations have cooperated in the establishment of recreational centers and summer bible schools. Our Boy and Girl Scout organizations have done particularly excellent work.

We have inaugurated a strong A. O. A. program which has done wonders to instill the spirit of patriotism among the children. We have specialized in pointing out to the children that every fire we have in Gary helps our enemies, because it destroys our country's assets, and that whoever deliberately starts a fire is a traitor to America. We keep prominently before their minds the fact that whenever a fire engine leaves its station it burns up precious gas that could be used to send one of our bombers over Berlin, and help win the war more quickly and bring their daddies home just that much sooner. A vital part of our A. O. A. program consists of participating in all the scrap drives for the collection of iron, rubber and paper.

Through our Fire Prevention Bureau we are reaching the children in the schools and educating them in how to eliminate the causes of fire in their own homes. Our twelve speakers have all received special training in public speaking and have made 158 talks to over 25,000 school children in thirty-two different public and parochial schools during the past year.

HERE IS THE QUESTION

Have you noticed an increase in fire-setting by juveniles incidental to the general growth of juvenile deliquency which has been taking place since this nation entered the war?

If so, what per cent increase (approximately) has been experienced over pre-war years?

If you have been confronted by the problem, what steps did you take to remedy it, and what were the results?

What method, or methods, would you recommend to others for controlling the problem.

We have found the above methods highly successful in overcoming the problem of child arson and false alarms. And we can conscientiously recommend these measures to other communities to aid them in overcoming the same situation.

D. A. Boulden, Chief, Winnipeg, Man.: There has no increase in fire setting by juveniles in the City of Winnipeg since Canada entered the war. There has been an increase in false alarms.

The Public Parks Board, Service Clubs and interested citizens have taken a keen interest in the prevention of juvenile delinquency. Knowing of its increase since the war started, the Parks Board have built playgrounds and swimming pools, the School Board has instituted the Air Cadet and Army Cadet training, and the members of Service Clubs have worked out schemes and the organization of boys' and girls' clubs with lake and beach camps, with capable Y. M. C. A. instructors in charge, the main idea being the building of character.

D. A. O'Connor, Chief, Omaha, Neb.: In 1943 the number of juveniles turned over to the authorities was nearly 100% greater that the number turned over in either 1941 or 1942. The number of fires involved was not increased that much but the number of children involved in each fire averaged higher. However, so far in 1944 the rate of juvenile incendiarism has fallen off, and is more nearly at the pre-war rate.

In coping with this situation, and so far it appears that the plan is bearing fruit, we investigated thoroughly every fire that even had an earmark of having been caused by children, and in all cases the parents of all children involved were ordered to appear before either the juvenile authorities or fire department authorities. We have been working on the assumption that after all, it is the parent who is responsible, especially as so many of the children involved are very young—often under thirteen years of age. Coupled with this, we have intensified our work in the schools through our Junior Fire Patrol organization. We also supervise the merit badge of Firemanship for the Boy Scouts, and this gives us another contact for cooperation of this older group of boys. So far the results are gratifying, and I believe that by the exercising of vigilance, we will be able to maintain a reduction in the amount of juvenile incendiarism.

Frank Egenriether, Chief, St. Louis, Mo.: The general growth of juvenile delinquency has caused a thirty per cent increase in fire setting by juveniles. Weed fires are the major cause of the increase. Another contributing factor is the influx of juveniles from the rural communities into the city, where parents are engaged in war industries, and the juveniles are more or less left alone while their parents are at work.

Addressing the student body of all the schools in our city by uniformed firemen from the Speakers' Bureau of our department during Fire Prevention Work, along with regularly scheduled instruction by the faculty, and debates by the students in many of our schools on the seriousness of fire due to carelessness, has been a big factor in the reduction of fires. I am of the opinion that such a program will be very beneficial in controlling the juvenile problem.

G. E. Hare, Chief, Jacksonville, Fla.: Considering the increase in population of the City of Jacksonville, I don't believe our fire setting has increased during the war.

We are confronted with the same problems as the rest of the nation with regard to juvenile delinquency. I believe the only way to ever stop juvenile delinquency is to begin with the adults and see that they take more interest in their children. After this is done, there should be a decrease in this problem which is so serious. I am all out for something to be done to curb the juvenile cases we have today.

C. W. Brown, Chief, Wichita, Kans.: As to the general growth of cases of juvenile delinquency in fire setting, incidental to the general growth of our city, I would say there has been no increase. In fact, we believe firmly that in our city, from our records and also based on the increase of population, we have been able to cope with the situation and lowered the rate of juvenile fire setting by our educational program and with the cooperation of our city organizations, associated with the cooperative spirit of the people at large.

The suppression and control of not only juvenile fire setting, but control and suppression of fires in our city and surrounding territory is always a problem. A motive to enable people to stand together and care for each other, as well as self objective of strength of character is what enables people to survive.

We feel a system in operation is much better than an inoperative perfect plan which is still on paper. Fire prevention is engineering, education and enforcement. Thereby we recommend that thorough organization and advance planning and preparation will contribute most effectively to the solution of this problem. Further effectiveness is not achieved by spectacular methods of progress or showmanship. A necessary function is coordination. The fire department, like all organizations, must do its most effective work through education.

It is by such means of education on fire prevention activities and publicity that we attribute our decrease in juvenile fire setting.

A. Brown, Chief, Birmingham, Ala.: This is one problem with which I am glad to say we have had no experience. We have not had a fire from this cause.

Our type of delinquents seems to run to stealing. In the last few days ten high school boys have been arrested for petty larceny.

Our Commissioner of Public Safety, Eugene B. Connor, is sponsoring a series of high school dances and also a soft ball league for underprivileged boys. Donations from citizens furnished money to buy the equipment and each fire company has from one to three teams which they supervise.

I believe these two projects have helped considerably in holding down juvenile delinquency in Birmingham.

H. D. Demonbreun, Chief, Nashville, Tenn.: We are pleased to report that juvenile delinquency relative to fire setting has been negligible. In fact, we

(*Continued on page* 611)

THIS DISCUSSION WILL BE CONTINUED

Due to the large number of Chiefs who contributed their experiences, the discussion on this subject will be continued in the next issue.

Safety Patrol Boys Learn About Fighting Fires

Small neighborhood fires will hold no terrors for these alert lads, chosen from ranks of Seattle grade school Junior Safety Patrols, now being instructed in operating emergency water pump cans. A group of 100 boys was selected by police captain George W. Kimball, who has directed training of the patrols for the past eighteen years. The boys like their new activity. A demonstration packing box and oil blaze leaps high as the young fire fighters go to work. The pump can throw a strong 40-foot stream.

Offers Remedies for Fires in Bowling Establishments

No new or mysterious causes have been responsible for the recent epidemic of fires in bowling alleys in various parts of the country, it was found by engineers of the National Board of Fire Underwriters as a result of studies of a series of blazes in such recreational centers. Findings and recommendations for reducing fire hazards are contained in a 20-page booklet, "The Fire Hazard of Bowling Alley Establishments," just published by the Board.

The studies indicated that smoking in the pin rooms was the most frequent cause of fires in bowling alleys. Because the pins usually are reconditioned when the alleys are closed, there is no supervision of those doing the work, and enforcement of "no smoking" rules is difficult. It was recommended that pins be sent outside to firms specializing in such refinishing. It also was suggested that refinishing of alleys be entrusted to outside firms skilled in such work and acquainted with fire hazards related to it.

If operators of the alleys must do pin reconditioning on the premises, it is recommended that the work be done in a room built to specified fire-safe standards. There should be adequate ventilation in the room, approved waste cans should be provided and precautions taken to confine drippings of the shellac or pyroxylin lacquers and thinners. Lathes and sanding or buffing machines should be properly installed and not operated when flammable finishing materials are being used; all efforts should be made to prevents smoking in the refinishing room and adequate first aid fire fighting appliances provided.

The following recommendations were made to operators who have their regular employes refinish the alleys: Acquaint them with the hazards of the materials being used and proper precautions to be taken; refinish the alleys only when the establishment is not open for business and remove or extinguish all sources of ignition; provide suitable fire extinguishers; properly dispose of all waste, and wet down and place in an approved waste can all lacquer residue from sanding machines.

Development of pyroxylin lacquers of a higher flash point, so that they will not ignite so readily, was recommended and the installation of additional exits was strongly urged, as it was pointed out that exit facilities usually are at one end of the alleys only

The studies, which covered thirty-three fires occurring in the past few years, showed the following analysis of causes: smoking, 13; unknown, 7; common hazards, 5; sparks from machinery, 3; electrical defects, 3; boys burning paper, 1; and spontaneous ignition, 1.

Denver Amusement Park Tragedy

Hard on the heels of the Ringling Brothers, Barnum & Bailey Circus disaster came another fatal fire in Elitch's Gardens, a Denver (Colo.) amusement concession, which claimed six more victims, including two soldiers and their wives.

This fire, attributed by some to a "cigarette" but officially listed as of "unknown origin," occurred in a series of connected combustible structures housing the winding scenic boat canal known as the Old Mill. Outbreak of the blaze is said to have been first noticed about three-quarters of the way through the long tunnel, as the last of three amusement boats were drifting past the spot. It was in this craft that the two soldiers and their wives who lost their lives were riding. Occupants of the first two boats reported they heard cries from the occupants of the other, and observed a flash of fire and burst of smoke. They managed to escape the sudden rush of flames by pushing their boats downstream, with the current. The opinion has been advanced that those in the rear craft attempted to shove their boat back, against the current and were overcome in the attempt.

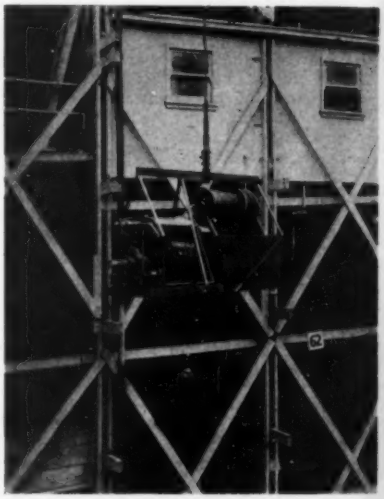
The other two casualties were two of the Garden's attendants who entered the burning tunnel in a gallant but futile effort at rescue. All victims were brought out by firemen under the direction of Chief John F. Healey, who stated that this is one of the worst tragedies he has ever witnessed in his long fire-fighting career. Despite the desperate efforts of firemen, aided by doctors, to resuscitate the victims all six were beyond hope.

The "tunnel" which was the only structure entirely burned, is said to have been of wood construction throughout, with tarred roof. It is reported that decorations had been painted at different points along the interior which may have increased the spread of the blaze.

Fire Protection of Marinship Corporation

Not a single serious fire loss in the first twenty months of its existence—that is the record of the fire department charged with protecting the vital Marinship Corporation, tanker shipyard on San Francisco Bay.

Since ground was first broken for the mile-long yard in March, 1942, Marinship's firemen have been on duty with the latest in industrial fire-fighting equipment. Despite numerous spontaneous ignition and trash blazes, not a single fire has got out of control or resulted in serious damage.



Portable Fire Fighting Equipment.
Weighing slightly less than a ton, Marinship's portable fire fighting equipment is child's play for one of the giant shipyard cranes. When placed on the deck of a ship, this unit can reach 300 feet with its ¾-inch line.

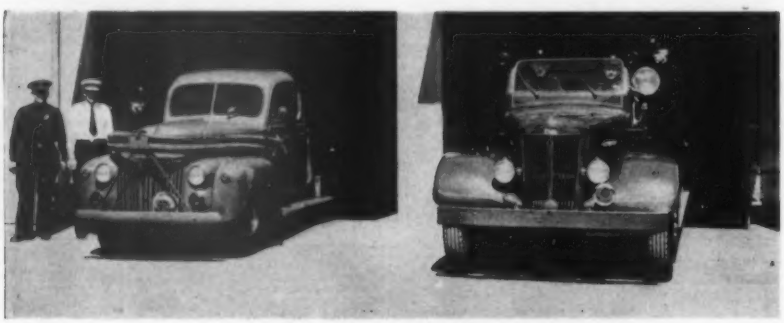
A portable pump and tank unit, designed by H. H. Spomer, superintendent of Plant Protection, and Fire Chief C. E. Olson, was manufactured specially for the company by Ansul Chemical Company of Modesto. It consists of a portable booster pump and tank unit using a Wisconsin V-4 pumping engine, a single-stage centrifugal pump (capacity 130 gallons a minute), and a 150-gallon tank with 300 feet of ¾-inch booster line and two length of 3-inch suction hose.

In the event of a fire on a ship located on the ways or at the outfitting docks, this portable is swung from the pickup to the deck of the hull by crane.

Other equipment includes two 500-gallon pumpers. The department maintains two engine houses, one at either end of the yard, manned by a three-shift staff of seventy-five men.

An experienced fire watcher, carrying a carbon-tetrachloride extinguisher, is assigned to each hull. In addition, all hulls are equipped with five dry-powder, gas-expelled extinguishers placed at standard locations.

The fire department is part of the Marinship Plant Protection Division, under Capt. H. H. Spomer. Chief of the department is C. E. Olson, formerly assistant chief of the Tulare (Calif.) Fire Department, and aiding him as assistant chiefs in charge of the three shifts are Jack Johnson, formerly of the Stockton (Calif.) Fire Department; John Jepson, former chief of the St. Helens (Ore.) department, and A. T. Henrich, former chief at Ukiah (Calif.).



One of Two Fire Stations Maintained by the Marinship Corporation Fire Department.
At the left is the pickup truck with portable pump and tank unit, and at the right the 500-gallon pumper. Standing at far left are Assistant Chief A. T. Henrich and Chief C. E. Olsen.

CHIEF ART J. BAKER
President
Lewistown, Mont.

CHIEF S. J. POPE
First Vice-President
Boston, Mass.

CHIEF CHAS. A. DELANEY
Second Vice-President
Lakewood, Ohio

JAY W. STEVENS
Executive Secretary
San Francisco, Cal.

CHIEF DANIEL B. TIERNEY
Secretary-Treasurer
Arlington, Mass.

Ex-CHIEF J. ARMSTRONG
Director and Secy-Treas.
Dominion Division
Kingston, Ont.

CHIEF A. T. CALLAHAN
Past President and Director
Harrison, N. J.

CHIEF P. STEINKELLNER
Director
Great Lakes Division
Milwaukee, Wis.

CHIEF RAY TILLER
Director and Ex-Pres., I.A.F.C., and Secretary-Treasurer
Missouri Valley Division
Waterloo, Iowa

CHIEF SELDEN R. ALLEN
Director, New England Division, and Ex-President
Brookline, Mass.

CHIEF HENRY R. CHASE
Director, I.A.F.C., and President, Southeastern Division
Miami, Fla.

CHIEF FRANK H. SMITH
Director I.A.F.C. and President
Southwestern Division
El Dorado, Ark.

OFFICERS AND DIRECTORS INTERNATIONAL ASSOCIATION OF FIRE CHIEFS

CHIEF THOMAS LANE
Director, I.A.F.C., and President
Pacific Coast Division
Alameda, Cal.

ASST. CHIEF FRANK DEEN
Director, I.A.F.C., and President
Eastern Division
Lancaster, Pa.

CHIEF ALLAN F. PAYSON
President
New England Division
Camden, Me.

CHIEF GROVER FROCK
President
Great Lakes Division
Springfield, Ohio

CHIEF W. L. ANDREWS
President
Dominion Division
Sudbury, Ont.

CHIEF CHARLES L. SLADE
President
Missouri Valley Division
Des Moines, Ia.

EX-CHIEF C. E. CLARK
Secretary
Eastern Division
Wayne, Pa.

CHIEF R. E. MOTTESHEARD
Ex-Pres. I.A.F.C., and Secy.-Treas.
Great Lakes Division
Dearborn, Mich.

CHIEF G. R. McALPINE
Secretary-Treasurer
Southwestern Division
Oklahoma City, Okla.

CHIEF JOHN W. O'HEARN
Secretary-Treasurer
New England Division
Watertown, Mass.

CHIEF W. W. STEPHEN
Secretary-Treasurer
Southeastern Division
Monsanto Chemical Co.
Anniston, Ala.

EX-CHIEF G. L. MITCHELL
Treasurer
Eastern Division
East Orange, N. J.

DIRECTORS AND OFFICERS OF DIVISIONAL ASSOCIATIONS, I. A. F. C.

R. G. PULVER
Fire Equipment Div.
John Bean Mfg. Co.

JOHN F. KIDDE
President
Walter Kidde & Co., Inc.

KATHRYN L. COUNTS
President
Oren Fire Apparatus Co.

E. G. WEED
Executive Vice-President
Pyrene Manufacturing Co.

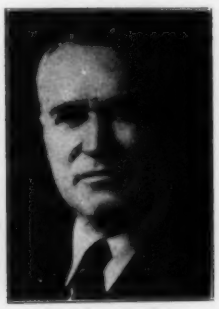
LESTER STEVENSON
Sales Manager
Seagrave Corp.

C. T. McGRAW
President
Circul-Air Corp.

J. O. BINFORD
Gen. Sales Mgr.
American-La France-Foamite Corp.

E. E. O'NEILL
President
American- La France-Foamite Corp.

HUBERT WALKER
Mgr. Motor Fire Apparatus Sales Engineering Dept.
American-La France-Foamite Corp.



SCOTT E. ALLEN
President
C-O-Two Fire Equipment Co.

PETER PIRSCH
President
Peter Pirsch & Sons Co.

W. R. PIRSCH
General Manager
Peter Pirsch & Sons Co.

ARTHUR G. SULLIVAN
Gen'l Sales Manager
Buffalo Fire Appliance Corp.

CHAS. H. STEPHENS
President
Buffalo Fire Appliance Corp.

B. D. BARTON
Man. of Fire Pump Sales
American-Marsh Pumps, Inc.

R. J. GRAVES
Mgr. Munic. Fire Hose Sales
American Rubber Mfg. Co.

N. S. DODGE
President
American Rubber Mfg. Co.

H. S. BIRD
Treasurer
Carpenter Mfg. Co.

E. R. MARSTERS
President
Carpenter Mfg. Co.

WILLIAM MOELLER
Superior Fire Equipment Co.

FIRE EQUIPMENT MANUFACTURERS AND REPRESENTATIVES

H. L. STETTLER Jr.
Exec. Vice-Pres. & Gen. Mgr.
Akron Brass Mfg. Co.

S. G. LANGHER
Vice-President
Akron Brass Mfg. Co.

W. W. SCOTT
General Manager
Federal Electric Co.

J. C. SCHELLIN
Pres. & Gen. Mgr.
Wooster Brass Co.

K. E. REARICK
Sales Manager
Wooster Brass Co.

J. H. GREEN
Sales Manager
Eureka Fire Hose Div.
U. S. Rubber Co.

E. E. HANSEN
Vice-President
Elkhart Brass Mfg. Co., Inc.

ALBERT E. HANSEN
Chairman of the Board
Elkhart Brass Mfg. Co. Inc.

E. H. HANSEN
President
Elkhart Brass Mfg. Co., Inc.

R. C. ANDERSON
Vice-President
Buckeye Iron & Brass Works

J. B. DAVIES
Mgr. Industrial Dept.
Mine Safety Appliances Co.

R. H. SCHMIDT
Gen. Sales Mgr.
Four Wheel Drive Auto Co.

W. A. OLEN
Pres. & Gen. Mgr.
Four Whel Drive Auto Co.

F. D. BACON
General Manager
Fire Extinguisher Div.
The General Detroit Corp.

A. B. SIEGFRIED
Manager
Apparatus Division
General Fire Truck Co.

S. O. COOK
Secretary-Treasurer
Boyer Fire Apparatus Co.

ERNEST L. MAXIM
President
Maxim Motor Co.

L. W. YOUNG
President
Young Fire Equipment Corp.

R. C. IDDINGS
President & Gen'l Mgr.
Fyr-Fyter Co.

JOHN O. VEIT
President
C. G. Braxmar Company

FIRE EQUIPMENT MANUFACTURERS AND REPRESENTATIVES

R. A. CORNWALL
President
National Fire Equipment Co.
Div. Welders Service, Inc.

L. E. LOWRY
Sales Promotion Mgr.
The Gamewell Co.

FRED B. PHILBRICK
Pres. & Gen. Mgr.
The Gamewell Co.

E. J. McCARTHY
Gen. Sales Mgr.
The Gamewell Co.

FRED A. WATEROUS
Sales Manager
Waterous Co.

G. W. STOWELL
General Manager
Midwestern Mfg. Co.

J. J. RYAN
Sales Mgr.
Water Fog Div.
Rockwood Sprinkler Co.

WM. J. CARROLL
President
Rockwood Sprinkler Co.

NELSON THOMPSON
Vice President
Homelite Corp.

E. J. ARPS
Sales Manager
Duo-Safety Ladder Corp.

T. M. BURTON
Vice-President
D. B. Smith & Co.

H. A. SHARFENBERG
Asst. Sales Mgr.
Fire Engine Div.
Mack-International Motor
Truck Corp.

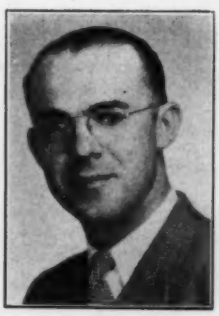
F. W. BEARDSLEE
Sales Manager
Fire Engine Div.
Mack-International Motor
Truck Corp.

A. F. FENNER
Vice-President in chg.
Central Div. Operations
Mack-International Motor
Truck Corp.

HERMAN P. SCHULTZ
Sales Manager
Republic Rubber Co.

WILLIAM SCHLEINITZ
President
Dayton Fire Equip. Co.

T. S. McINTIRE
F. N. McIntire Brass Wks.



JOHN YANDURAS
Security Fire Equipment Co.
Trenton, N. J.

EDWARD CAIRNS
President
Cairns & Brother

C. F. REININGER
Vice-Pres. & Gen. Mgr.
Powhatan Brass &
Iron Works

FIRE EQUIPMENT MANUFACTURERS AND REPRESENTATIVES

ARTHUR MYERS
Director of Sales
Atlas Safety Equipment Co.

FRED J. DECKER
Works Manager
Ward La France Truck Div. Great American Industries, Inc.

A. WARD LA FRANCE
Vice President
Great American Industries, Inc.

NILS G. BJORCK
Eng'r. Fire Appar. Dept.
Great American Industries, Inc.

H. G. CAVANAGH
General Agent
American District Tel. Co.

FIRE EQUIPMENT MANUFACTURERS AND REPRESENTATIVES

Fatal Fire Caused by Oil Explosion

The worst fire tragedy in the history of Fitchburg, Mass., occured on the night of May 25 when three children and two adults met their death following an explosion and fire at 10 Cascade Street.

Victims of the fire that claimed the five lives were Paul Espie, aged 5; found dead in a second floor bedroom by Fitchburg firemen and Joan and John, eight-year-old twins, also found dead in their bedroom; Clarence A. Conrad 59, and his wife, Margaret, 58, found dead at the entrance to a hallway from their living room on the third floor.

The fire apparently started when Robert Espie, 12 year old member of the family, returning home from a fishing trip, entered a shed in the rear of the building carrying a lighted lantern. Within a moment after he entered the building, the explosion occurred and flames shot skyward. The boy was blown out of the shed, fire raced to the roof and trapped all occupants before they had an opportunity to escape.

Neighbors called the Fitchburg Fire Department and also went to aid in rescuing the trapped occupants but the flames spread so rapidly to the three sides of the building, rescue was impossible.

Fitchburg firemen, in command of Fire Chief Michael J. Shea and Deputy Chief Thomas E. Rude, tried vainly for fifteen minutes to reach the victims by means of ladders but the intense heat drove firemen off ladders and started to melt their rubber coats and to affect their smoke masks.

Shielded by spray from several 1½ inch hose lines while other firemen were handling 2½ inch lines nearby, one company entered the second floor at the height of the fire and found the three children dead from asphyxiation.

Robert Espie, who was blown from the shed which is attached to the house proper, responded to emergency treatment but the three other children and the Conrads were beyond medical assistance when they were taken to Burbank Hospital.

Deputy Chief Rude reported that at least three violent explosions occurred during the fire. One explosion shattered both ends and ripped the side of a range oil drum stored in the shed which served also as a rear entrance to the house. Flames from the burning oil shot up the height of three floors, burning out the rear stairway and a square area twenty feet across directly to the roof. Firemen checked the spread of the fire within a foot of two 50-gallon range oil drums in another nearby shed.

Damage to the building was estimated to be at $10,000, with all personal effects lost in the fire. Five companies responded on the first alarm for the fire which was sounded at 10:05 P. M. from Box 76, Westminster Street and Princeton Road. Recall was at 2:15 A. M. Companies responding were Engines 2, 3, and 4; Hose 2, and Ladder 3.

THOMAS F. MAGNER

Emergency Truck Recently Put in Service in Gowanda, N. Y.

This emergency truck recently added to the apparatus of the Gowanda, N. Y. Fire Department, is fully equipped with an inhalator with extra tanks, a flood lighting system, gas masks, salvage covers, first aid kits, tanic acid kit, stretcher, ladders, ropes, etc. Chief Harry G. Smith heads up the department.

Convention Dates

Secretaries of firemanic organizations are requested to send in meeting dates and the names of new officers.

Aug. 28-31—INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. Annual meeting, Grand Rapids, Mich. Secretary, Chief Daniel B. Tierney, 8 Robbins Road, Arlington, Mass.

Sept. 8-9—CONNECTICUT STATE FIREMEN'S ASSOCIATION. Annual meeting, Eastern Point, New London, Conn. Secretary, John Moehring, 56 Toms Road, Stamford, Conn.

Sept. 16—NEW JERSEY STATE FIREMEN'S ASSOCIATION. Annual meeting, War Memorial Bldg., Trenton, N. J. Secretary, Fred A. Trowbridge, 602 Chamber of Commerce Bldg., Newark 2, N. J.

Sept. 16-17—OHIO STATE VOLUNTEER FIREMEN'S ASSOCIATION. Annual meeting, Lancaster, Ohio. Secretary, Merle W. Gifford, 5105 Market Street, Youngstown 5, Ohio.

Sept. 26-28—TENNESSEE FIREMEN'S ASSOCIATION. Annual meeting, Clarksville, Tenn. Secretary, Joe J. Martin, Fire Headquarters, Nashville, Tenn.

Sept. 27—FAIRFIELD COUNTY FIRE CHIEFS' PLAN. Monthly meeting, Fairfield. Secretary, John Moehring, 56 Toms Road, Stamford, Conn.

Oct. 2-4—INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION. Annual meeting, Boston, Mass. Secretary, Irvin Shulsinger, 8 East 41 Street, New York, N. Y.

Oct. 18—FIRE CHIEFS' EMERGENCY PLAN OF WESTCHESTER COUNTY. Monthly meeting. Secretary, Howard S. Geer, 35 Railroad Avenue, Rye, New York.

Nov. 15—FIRE CHIEFS' EMERGENCY PLAN OF WESTCHESTER COUNTY. Monthly meeting. Secretary, Howard S. Geer, 35 Railroad Avenue, Rye, New York.

FALSE ALARMS

"Common F. D. Term Illustrated—
A Distributor"

Wrong Room

A celebrated comedian retired late on Saturday night. Soon he heard a scuffling in the corridor and a loud knock on the door. Opening it, he found a Saturday-night celebrant.

"Shorry," he numbled thickly. "Wrong room." And he zigzagged down the hall.

Fifteen minutes later came another heavy tap on the door. Again his intoxicated friend was there. "Sho shorry, ol' man," he said. "Wrong room." And he went away.

Twenty minutes later there he was again, murmuring apologies for "wrong room." By then the actor was furious; it took him all the bows from three matinees to get sleepy once more.

When at 3:30 he heard the familiar footsteps and knock on his door, he leaped out of bed, opened the door, and shouted: "Well?"

"Fevvensakes!" cried the drunk, "do you have every room in this hotel?"

Signally Marked

The expectant mother had been severely reprimanded by her doctor for spending all her leisure time riding around upper New York in a limousine. The doctor insisted she and everyone concerned would benefit by her spending all the time walking. It was the first expected and she walked diligently. About two weeks ago the baby was born. It had one green eye and one red eye.

Shrewdness

In a small town in the South there was a lad who had the reputation of not being very bright. People there had fun with him several times each day by placing a dime and a nickel on the open palm of his hand, and telling him to take his pick of the two. In each case the lad would pick the nickel, and then the crowd would laugh and guffaw.

A kind-hearted old lady asked the unfortunate youth one day: "Don't you know the difference between the dime and a nickel, son? Don't you know the dime, though smaller, is worth more that the nickel?"

"Sure, I know it," he answered, "but they wouldn't try me out on it any more if I took the dime."

Did Not Take Off His Hat

A salesman was driving along a country road one day when he saw a red-headed Negro child playing in front of a little shack sitting on the edge of a clearing. He had never seen a red-headed colored child before, so his curiosity was aroused. Stopping his car in front of the yard, he called out to the old colored mammy who was sitting on the porch:

"Is that your child?"

"Yassuh, he is," answered the mammy.

"Well, tell me something," he went on, "how did he happen to get red-headed?"

"He was borned lak dat," replied mammy.

"I can't understand that," said the salesman. "You certainly don't have red hair. Is there any red hair back in your family?"

"Naw suh, not a bit," replied mammy.

"Well, how about the father of the child, is he red-headed?" the salesman persisted.

"Ah don' know dat, mister," answered the mammy. "You see, dat gentleman didn't take off his hat."

Simple

The quiet man in the crowd had grown tired of the boastful talk of the others. So, when there was a lull in the conversation, he began:

"This morning I went over to see a new machine we've got at our place, and it's astonishing how it works."

"And how does it work?" asked one.

"Well," was the reply, "by means of a pedal attachment a fulcrum lever converts a vertical reciprocal motion into a circular movement. The principal part of the machine is a huge disc that revolves in a vertical plane. Power is applied through the axis of the disc, and work is done on the periphery, where the hardest steel by mere impact may be reduced to any shape."

"What is this wonderful machine?" chorused the crowd.

"A grindstone."

Misunderstood

Several men were traveling by train. Presently one produced a large fruit cake, which he devoured greedily.

Time passed. Suddenly he began groaning and doubling himself up and straightening out again. When this had gone on for some time, a friend asked him:

"'Smatter, Jim?"

"That cake I ate," groaned the sufferer. "It had nuts, and I think the missus forgot to shell them."

"Lor!" said his friend. "And can you crack 'em just by bending?"

Wind the Cat, Throw Out the Clock

Sir Lancelot, lost one dark night in a deep woods, wandered about helplessly and after some hours encountered a handsome St. Bernard dog. The dog attached himself to Sir Lancelot, and they went on together for some time. Then the knight exhausted, sat on the back of the magnificent animal. It dutifully took him straightway to a tavern.

Sir Lancelot knocked at the door. "Could you give me bed and board?" he inquired of the proprietor. The tavern keeper peered out into the darkness.

"Who am I turn out a knight on a dog like this?" he answered.

HYDRANTS
VALVES
and
Pipe Line
Accessories

A. W. W. A. HYDRANTS
Underwriters Approved

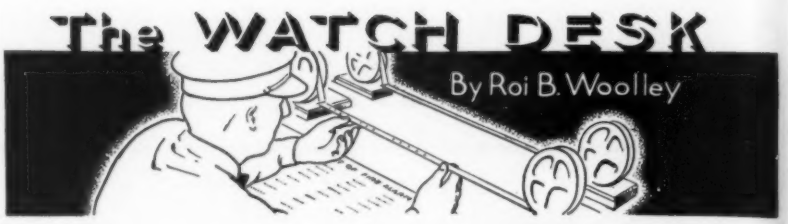
Conform to American Water Works Association specifications. Approved and listed by Underwriters' Laboratories and Associated Factory Mutuals. Well known and widely used for many years.

SPECIAL TRAFFIC MODEL (shown at right) is designed to yield at ground line under impact, repair being simply renewal of breakable bolts and breakable coupling on stem. Dry top, revolving head, easy to lubricate. High efficiency because barrel diameter not reduced and there are no working parts or obstructions in waterway.

VALVES: A. W. W. A. types, iron body, bronze mounted with double-disc parallel seat or solid wedge type. Non-rising stem, outside screw and yoke; or with sliding stem and lever. Also furnished hydraulically operated. Square Bottom type operates in any position. All are rugged and dependable, made of best material with highest quality workmanship.

M&H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

The WATCH DESK



Our inquiring reporter overhauls the firemanic news of the day

Where Were the Red Su'penders?

Edw. H. Scattergood, Red Bank contrib', rings up 1000 on the "laughmeter" this month with his story about Fireman Rudolph Wichelman of Eng. 62, Bustletown (Pa.), a suburb of Philadelphia.

The story has it that Fireman Wichelman lost his pants. Furthermore, he couldn't do a thing about it, because at the time he was standing atop a ladder, playing a fire stream on the burning roof of the Bustletown Methodist Church and the R & R being what they are, you simply don't drop a charged nozzle especially when you're perched on a lengthy ladder—at least you don't until something has shut off the water in the line.

Which, we are told, is just how long Brother Wichelman waited—while the crowd of onlookers cheered!

* * *

From Fire Fan Hardy

Thanks for a dozen newsy bits, of which the following rate immediate publication (others will be used in due time):

Salina (Kan.) firemen clanged up to a house in response to an alarm only to be asked by a harried housewife if they would mind helping her with the spring cleaning. She wanted the Brothers to "hang her awnings in their spare time"!

* * *

In Philadelphia (Pa.), eight prospective brides had a fast fitting at a dress shop t'other day. The gals were trying on their bridal gowns when smoke began pouring into the shop from a basement fire. On huh—by the time the lads arrived, the young women had done another lightning change into street clothes and had fled to safety. (Not a Philly fireman lost an eye in the melee!)

* * *

Jamestown (N. Y.) firemen made a new kind of cat rescue. Instead of the usual ladders against a tree, they piled a booster line down a storm sewer. The cat, which had fallen in one manhole, was snatched out by a fireman as the water from the hose line swept it down to the next one.

* * *

Orchids for the Month

This month's orchids go to Marine Corporal Michael Boam, Texas A & M Radio Operators School whose quick thinking and speedy action prevented a possible disaster for the Southern Pacific R. R.

Corp. Boam, with Pfc. Mickey Beck, were headed for Houston (Tex.) and week-end liberty when they reached the scene of a grade crossing crash between a S.P. freight and oil train and a truck trailer; this was at Cypress (Tex.).

Truck and trailer had literally been wrapped around the locomotive and were burning fiercely. Steam and flames erupted from the locomotive cab from whence engineer and fireman had previously leaped to the roadbed after applying the emergency brakes. Both were injured.

Boam, former machinist for the S.P. and Y.P. R.R., applied first aid to the crewmen, then surveyed the wreck and realized that something had to be done instantly. By this time a box car behind the engine was enveloped in flames with a string of oil cars immediately behind in immediate danger. Roam leaped to the engine cab where he succeeded in smothering the flames and shutting off escaping steam. He then pulled the train away from the truck, separated the burning box car from the rest of the train and pulled the engine to safety. Seeing that everything was secure, Boam then informed the train dispatcher at Houston of his actions.

After a kalidescopic two hour session the two tired, dirty Marines continued their liberty.

The Southern Pacific has informed Boam's comanding officer of its gratitude for work well done and sent Boam a check for $100. Which just goes to show you can't beat the Marines!

Thanks, John Brickell S2/cUSNR, Texas H & W College (formerly of Menlo Park, Calif. F.D.) for this item, and for your kind remarks about FIRE ENGINEERING.

* * *

Robinson Reports

Earle Robinson, demon newsclipper of Des Moines (Ia.) sends us a batch of items, of which the following are especially hot:

Boston, Mass.: Boston's spring cleaning campaign struck a temporary hitch when an automatic broom became ignited as it swept up a lighted cigarette. Mishap cost city $25, and the Brothers few minutes work.

* * *

FIRE! FIRE! FIRE! squawked Sam, a parrot belonging to the M. S. Awes family, Minneapolis, Minn., while the members of the family, who were watching a home movie show laughed heartily. But when the movie ended, and Sam continued to squawk, the family investigated and found the kitchen of their home ablaze. Sam still was squawking when he was carried out by the family who fled the house.

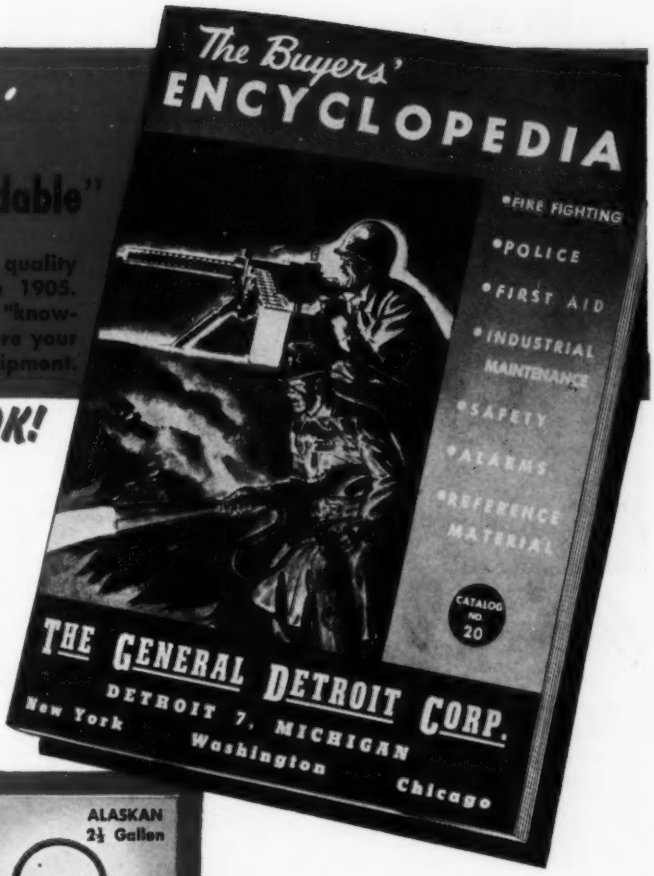
* * *

Kansas City: Four fire companies, two chiefs' cars and a first aid car, 22 of the Brothers in all, rushed up to answer a Minnesota Ave. alarm here. One man went inside to extinguish

Here's why . . .

"if it's GENERAL it's dependable"

General Detroit has been manufacturing high quality fire extinguishers and allied apparatus since 1905. Exclusive mass production methods and the "know-how" acquired over this long period of years are your guarantee of the finest in fire fighting equipment.



SEND FOR THIS FREE BOOK!

General Detroit's Buyers' Encyclopedia is a *must* for every fire chief. 48 pages packed with "hard-to-get" items. Over 500 different articles illustrated and described. Everything for fire fighting, first aid, plant protection, safety, and industrial maintenance. Ladders, hose, nozzles, sirens, accessories. Many pages of factual material on such subjects as nozzle capacities, hose thread specifications. Write for your free copy today! No obligation! Address Dept. 802.

CO2 Foy
4 lb., 15 lb. and larger sizes
ALASKAN 2½ Gallon
PROTECTOR 5 Gallon
FLOAFOME 2½ Gallon
S. O. S. FIRE GUARD 1 and 1½ qt.
RED STAR 2½ Gallon
NEPTUNE 5 Gallon

USE THESE FAMOUS FIRE FIGHTERS!

CO2 Foy Carbon Dioxide extinguisher. Swift, safe and efficient. For electrical, chemical, gasoline, and paint fires. Handy bracket for installation. 15 lb. size Underwriters' Classification B-1, C-1. 4 lb. size Underwriters' Classification B-2, C-2. Also available in other sizes.

S.O.S. FIRE GUARD Vaporizing Liquid (C.T.C.) Type extinguisher. 1 or 1½ quart, handy size for boat, car, truck, home, and plane. Effective on electrical, gasoline, and oil fires. Underwriters' Classification B-2, C-2.

ALASKAN 2½ Gallon Pump Tank Water Type extinguisher. Recommended substitute for soda acid extinguisher. May be used with anti-freeze charge. Underwriters' Classification A-1.

PROTECTOR 5 Gallon Pump Tank Water Type extinguisher. Same specifications as ALASKAN.

FLOAFOME 2½ gallon Foam Type extinguisher. For gasoline, oil, paint, and chemical fires. Underwriters' Classification A-1, B-1.

RED STAR 2½ Gallon Soda Acid extinguisher discontinued for the duration.

NEPTUNE 5 Gallon Pump Type extinguisher discontinued for duration.

THE GENERAL DETROIT CORP.

2270 E. JEFFERSON AVE., DETROIT 7, MICH.

CHICAGO *Distributors in all principal cities* NEW YORK

West Coast Affiliate: The General Pacific Corp.

Seattle • LOS ANGELES • San Francisco

THE NEW
SAW-GUN
SHOULD BE STANDARD
ON ALL
FIRE-FIGHTING EQUIPMENT

Here's Why..!

The Saw-Gun is a portable power-saw that will quickly cut into all metals, wood and other materials. Quickly attaches to any electric or air drill, and may also be propelled by a flexible shaft. Insert ordinary hack-saw blade for cutting.

Firemen equipped with this handy tool can now get at the fire quickly. Can cut openings into obstructions regardless of their material. Cuts rapidly through heavy gauge steel. No need to waste precious time removing steel gratings . . . cut them out of the way with this amazing portable tool. Does away with slow, cumbersome, dangerous gas cutting torches, together with their long lines of hose and heavy tanks.

Progressive fire-chiefs who know the importance of getting at a fire *fast*—who want a quicker means of getting to entrapped persons, will add the Saw-Gun as standard equipment.

ONLY $42.00
QUICK SHIPMENTS ON AA-5 PRIORITY OR HIGHER

Sold on Money-Back Guarantee

SEE YOUR JOBBER or WRITE DIRECT
Mid-States
EQUIPMENT COMPANY
Saw-Gun Division
2419 S. MICHIGAN AVE., CHICAGO 16, ILL.

the blaze. The other 21 waited. The Sam Sing Chinese laundry was too small to accommodate more than one fire fighter at a time.

* * *

Allows Ignoring of City Codes

What may have far reaching repercussions, is the ruling handed down in Philadelphia (Pa.) Federal Court of Appeals, by Judge John Biggs Jr. upholding the right of the Federal Public Housing Authority to ignore local building codes and regulations in constructing homes for war workers. The decision upheld a ruling handed down a year ago (1943) by Judge Cullen Ganey in which the city of Chester (Pa.) contested the Government's building of 150 temporary houses for Negro workers without adherence to such regulations. It is anything but encouraging news to Fire Chiefs to know that the Government may violate any local Building or Fire Prevention Code almost at will!

* * *

Should Be Signed by Uncle Sam

What constitutes grounds for divorce? Down 'n Gawgia, whence comes this item, a lady wants to get rid of her husband who, says the report, is a fire eater in a circus, because:

"He used to come home drunk and shoot flames out of his big mouth all around me. I used to huddle in a corner until he stopped. He never singed me, but he made me very nervous."

He'd make **us** sort of nervous, too! We suggest he be signed up for front line work on the Japs!

* * *

Strains the Imagination, It Does!

A midwest 'clipper' who signs himself "N. C." is responsible for this yarn. If we had the nerve to send it we, too, would use only initials.

This is about Oscar Leiber's Tavern which, in case you don't know it, is located in Millstadt (Ill.). It is also about Mr. Leiber's juke box, and a stroke of lightning and an unexpected concert. But pshaw! we've gone and tipped off the story!

Mr. Leiber was awakened one night by hearing his juke box banging out a popular tune, when by rights nobody should be downstairs at all, at all. So Mr. Leiber investigated. Oh yes, we forgot to add that all this time a thunder and lightning storm was in full blast which, to Mr. L. made the juke mu-sick all the more mysterious. But Mr. L. padded down to investigate. He found that lightning had struck an outdoor coin slot that operates the juke box, melted the switch, and started the record. All that remains now is for somebody to tell us that it was a Sinatra record and the gal "Swooners" wouldn't allow the Brothers to put out the fire for fear of stopping it!

* * *

Hot Words?

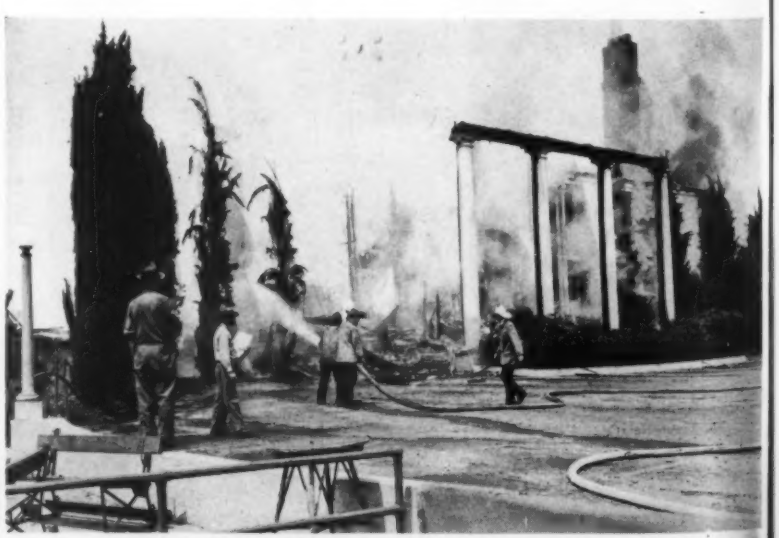
This'un comes from Washington Courthouse (O) where, our informant says, too much talking set the telephone exchange on fire! The telephone Supt's name is Fred Rost, and in making his report on the affair, he blamed **"excessive use of the line, which overloaded eight switches that service 243 farm subscribers and caused them to burn out!"**

We'll bet those 243 subscribers used some lurid language when the 'burnout' occurred!

* * *

Off the Tape

One of worst tragedies in transportation history of Passaic County (N. J.) occurred March 20, when 29 were known to have died as result of plunge of bus from icy bridge into Passaic River. Many deeds of heroism performed by volunteers. . . . Daniel Ellis, painter and member of Philadelphia Fire Company, Pottstown (Pa.), while at his job of burning off paint on home of pastor of a local church, set fire to porch roof.



Country Club Levelled by Fire

The Midwick Country Club, near Los Angeles, Cal., once was a famous showplace and swank playground for millionaires, but it became nothing but a mass of ruins when explosions and fire of undertermined origin recently struck it. The fire, which did damage estimated at over $100,000, left only charred pillars to mark the Southern California beauty and play spot.

GENERAL—Dependable as Yesterday

New as Tomorrow

What will tomorrow's fire truck be? If it bears the "General" name, famous in fire apparatus for over forty years, you can be sure it will be the best that money can buy.

For the War Department alone General has built and delivered over a thousand fire trucks —511 of these last year! Located in the strategic motor city, General has the capacity and the "know how" to deliver the unit you want, up-to-the-minute in efficiency and streamlined styling — engineered to meet all requirements.

For high quality, flexibility, compactness, and long life, leading municipal and industrial hose buyers choose patented INNERFLEX. It pleases the fire chief and firemen. Available in 1½" and 2½" sizes, INNERFLEX has a maximum bursting strength of approximately 800 lbs. Details rushed on request.

If it's GENERAL it's dependable

THE GENERAL FIRE TRUCK CO.

DIVISION OF THE GENERAL DETROIT CORPORATION

NEW YORK • 2200 E. JEFFERSON, DETROIT 7 • CHICAGO

West Coast Affiliate: The General Pacific Corp., Seattle, San Francisco, Los Angeles

"The Superior"
A MODERN and PROVEN
LIFE NET

A PAPER

to be delivered at the

I. A. F. C.

meeting by

William Moeller
Designer
Consultant

Paper Delivered by William Moeller at the International Convention of Fire Chiefs

It is now four years since I introduced to you a new Life-Saving Net made of rope. Many of you are now convinced that this net in comparison with the old construction is indeed a real Safety Net, especially with the added safety devices.

Speaking on the same subject, today let us understand that the fundamental construction as applied by us remains the same; namely the weaving of the rope, but the entire net is now streamlined.

The strong supporting frame work can be folded either into halves or quarters. To produce the maximum resiliency, the net is equipped with expanding direct pull Shock-Absorbers with Safety-Stop Links inserted. Leather straps, rivets, bushings, and dangling rods, are entirely eliminated.

There is nothing applied to the net to get out of order even with the greatest punishment. It has been satisfactorily tested up to approximately 11,000 lbs.

The tensile strength of each rope applied is approximately 1,500 lbs.

At this point you may like to know for comparison, the breaking strength of canvas. Here it is: 1,050 lbs. in the warp and only 770 lbs. in the filling. You notice the difference in breaking strength in the canvas, and no difference in the rope, which is uniform all around.

Now note: the canvas can not be made of stronger quality, but the strength of the rope may be increased.

Connecting the leather straps to the canvas by means of rivets does by no means strengthen the canvas. To be sure, the numerous rivets are weakening the canvas.

Years of research has taught us how to eliminate the weakening of the canvas. The modern Superior method grips the canvas firmly and safely without damaging or destroying the material and by so doing, utilizes every pound of strength.

Now you have the true story of rope and canvas. You can have either one or the other, or both. It is up to you to make your selection, but I still maintain that the Superior Rope Net is the strongest and the cheapest in the long run.

SUPERIOR FIRE EQUIPMENT CORP.
235 E. 42nd St. New York, N. Y.

Switching jobs to business of fire fighting, Ellis got garden hose, had fire under control when fellow firemen arrived. . . . Iowa's largest tree, the giant American elm in Ledges State Park was seriously damaged in March by lightning which set fire to its top. . . . When a three-alarm fire brought plenty of Brooklyn (N. Y.) apparatus to building near Brooklyn Bridge, firemen found their instructions clearly outlined for them in large letters on sign running across the building: **"Simply Add Boiling Water."** (Thanks H. W. A.). . . . Persistence was rewarded when members of Rescue Squad No. 1, District of Columbia F. D. resuscitated members of a family of three, after two-and-one-half hours hard work. . . . When a downtown Toledo (O.) sidewalk collapsed, a pretty 21-year-old co-ed was killed and her three companions hurt by being precipitated 20 feet into a basement. Firemen recovered the casualties. . . . A group of firemen of the District of Columbia won an increase in pay following spirited pleas for the raise by Chief Stephen Porter and others of the District of Columbia Fire Department. The increase equalizes the salaries of captains, lieutenants and sergeants of the Department with those of similar rank in the Police Department. . . . Destruction of home of Pvt. and Mrs. Joseph Biga, Boston Hill (Penn.) disclosed how poorly equipped Larksville (Penn.) firemen were to cope with blaze. They were without helmets, boots or raincoats; used hose which burst and soaked them, while bitter weather froze their wet clothes to them. Their trucks—both good in their days, more than 20 years ago—were ailing. A third engine housed at Welsh Hill failed to arrive because it has to be pushed in order to start it. Seems like Larksville deserves a bit of help! . . . Fire of undetermined origin destroyed landmark in center of Vandalia (Ill.), threatened two large business blocks before being controlled, all because the fire siren was "gebust" and all the volunteer firemen did not reach the fire for 'nigh onto an hour of its discovery. A wooden cigar store Indian was rescued! . . . When the Chicken Inn, dine and dance spot, coupla miles SW of Creston (Ia.) flared up, blaze was discovered by crew of a Burlington south branch passenger train. The engineman stopped the train near the Inn while the conductor made sure nobody was caught in the fire. Then they stopped further along at a nearby farmhouse and turned in the alarm. Cooperation, we calls it. . . . While recovering from severe burns suffered one week previously in a blaze from which she rescued one of her children, Mrs. Glenna Yarger, Toledo (O.), gave birth to a healthy boy. . . . **To the many eagleyed clippers who sent us the story about the burning of the Penmbroke (N. Y.) Town Hall, with its entire fire equipment, many thanks!** . . . claiming that the Peekskill (N. Y.) Fire Department is not receiving proper transmission of its fire signals due to antiquated fire alarm system, Chief David Cleveland Jr. has served warning that neither he nor his assistant chiefs will **"assume any responsibility for what may happen due to any critical failure of the system."** That's telling 'em! . . . In Philadelphia (Pa.), firemen hauled a sofa from a home in Essington and used it as a "rescue net" for a young couple, then one of the brothers dashed back into house to rescue the couple's 7-month old son. . . . A delayed item, from I. I. K. tells about the firemen of Buffalo who chased a New York Central freight train two miles before it was flagged to a stop and they could extinguish a blaze in a box car. . . . **A New York restaurant let a waiter go because he was a fire menace. The waiter in question had a beard which was in a dangerous position every time he made crepe suzette (and he refused to shave it off).** . . . Unnamed contrib' sends us one about hard luck of Chief George Robinson of Yuma (Ariz.), who when fire swept gym' of high school (1) Started up a light ladder, which broke and tumbled him to ground (2) stepped on a fire-weakened spot in the smoke-filled attic and had another nasty fall (3) painfully burned his hands. . . . Dear, Dear!—a Texas reader sends us the sad item about Preston Hollow, that State, and its new fire truck. The truck made its first run, but by the time it arrived a home had burned. Seems the firemen couldn't find the truck's ignition key! . . . In Queens (N. Y.), a big red fire chief's car with its glistening bell proved too much temptation for Edward Niemas, 29, who swiped it from in front of quarters of Engine 303, N.Y. F.D., took a wild joy ride, with bell going madly before he was picked up. . . . Francis Poutre, so the item sent us by H. H. H. says—was fined for speeding the other day—in a fire engine. There was no fire—he was just delivering the nice new truck! . . . **Thanks, JWC, Beverly, Mass., for the bundle of news clippings. They're being used.** . . . Firemen of Denver are hoping for more Victory Gardens this year; they learned last year that cultivation of lots into Gardens appreciably cut the number of grass fires. . . . Ubiquitous Jerry Daly sends one about Kenneth Olson, 40, who didn't stop to investigate when he was awakened by smoke, but broke window of his apartment, climbed out on ledge, yelled **"Fire!"** After he was rescued by jumping into a net, Oleson queried the Braves as to the extent of the fire. They led him into his kitchen, where he surveyed the damages—a burnt roast. . . . The Los Angeles papers carried a story about John Hanson who sued San Pedro for $3,500 for his home and $500 for furnishings because, he claimed, city employees were negligent and as a result fire in a burning lot communicated to his house, destroying

Otis Smith Still an Editor

Corporal Otis Smith, formerly correspondent covering the Baltimore area for FIRE ENGINEERING, still keeps his hand in trim at writing. He is in the Public Relations Office at the cantonment at Bainbridge, Ga., and contributes to a weekly camp paper, among his many activities.

The Quicker, Safer Way to Put Out FIRES

Here he is using a strong solid stream

In an instant he gets 60 degree fog

One twist, and here's 130 degree water curtain

Zip! And here's a solid stream as well

Quicker because, with the UNIVERSAL NOZZLE, it takes only an instant for the hoseman to pick exactly the stream needed — solid stream, fog of any degree, water curtain, or a combination of solid stream with fog or water curtain.

Safer because the water curtain which is instantly available with the UNIVERSAL NOZZLE protects the hoseman.

For reduced fire losses and increased safety, see that your hosemen can get the exact stream they need in an instant—

All With This One Nozzle

Solid Stream • Fog • Water Curtain
or Any Combination
with

The UNIVERSAL NOZZLE

USED BY { U. S. Navy and U. S. Army air stations, U. S. Coast Guard vessels, scores of industries, and municipal fire departments.

Dealers, fire departments, and industries are invited to send for the whole interesting story, without obligation.

Mail this Coupon

L. N. CURTIS & SONS, *Emergency Equipment*
451 Hudson St., Oakland 9, California

Send me details of construction, prices, etc., on the Universal Nozzle.

NAME_____

STREET_____

CITY_____ STATE_____

TITLE_____

YOU'VE NEVER SEEN SPEED UNTIL YOU'VE SEEN *This* IN ACTION!

● Dangerous fires...especially those involving flammable liquids, gases and electrical equipment...must be knocked out speedily, decisively.

And THEY ARE when the DUGAS Extinguisher with PLUS-FIFTY DUGAS Dry Chemical gets to work!

PLUS-FIFTY DUGAS Dry Chemical strikes the flames...then releases fire-smothering gases...and the fire is out.

Non-toxic, non-corrosive, and non-abrasive, PLUS-FIFTY DUGAS Dry Chemical harms nothing except fire. Get all the facts about PLUS-FIFTY DUGAS Dry Chemical and priority information regarding DUGAS Extinguishers. Write today!

Approved by Underwriters' Laboratories and Factory Mutual Laboratories.

PLUS-FIFTY
duGas
REG. U. S. PAT. OFF.
DRY CHEMICAL
U.S. PATENT 178660

SEND FOR FREE CHART... showing characteristics of all types of approved hand fire extinguishers.

MODEL 30-T HAND EXTINGUISHER
FE-9-44

DUGAS ENGINEERING CORP.
OWNED AND OPERATED BY
ANSUL CHEMICAL COMPANY, MARINETTE, WISCONSIN

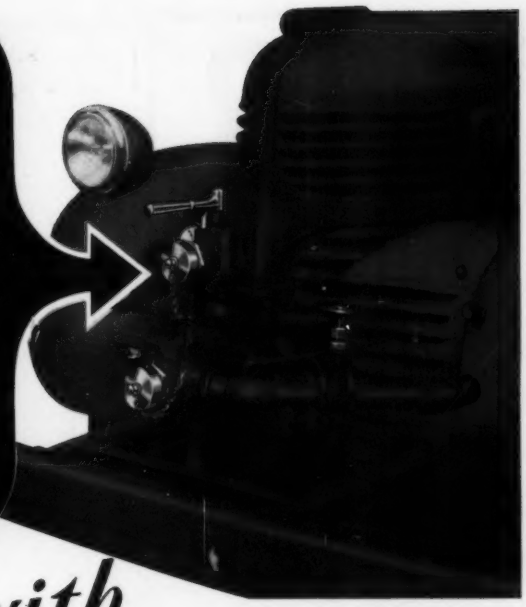
it. Court awarded him $2,500. . . . **Our delayed but sincere thanks to John L. Freas, a member of the Bureau of Fire stationed at Eng. 52, Philadelphia (Pa.) for his letter about the fire patrols of his city, and the interesting clippings, some of which he has no doubt discovered were used in this magazine.** . . . We still snicker over that note of Contrib' Earle Robinson who wrote us **"Back on the job after spending my vacation in hospital with 10 pretty nurses!"** . . . Here's onefor Ripley: Chief Russell Watta, Dayville (Conn.) went fishing for a puppy (no, not a dog fish) and got him—in a 64-foot well! When the pup fell into the well the Chief used a fishhook, snagged the pup's fleshy back and hauled him to safety, none the worse for his experience. Some angler! . . . Out in Sacramento (Calif.) says another story sent by Earle Robinson, Mayor Thomas B. Monk opened an envelope and out fell $100 in bills and an anonymous letter, which said **"Forty-two years ago I caused the fire department to make a run that should not have been made. I am enclosing $100. I ask you to give it to the fire department. . . . I want the City of Sacramento to forgive me."** Gee—there IS a Santa Claus! . . . Yelling that his wife was giving birth to a baby, Ernest Chavez drove his truck into a downtown South Gate (Calif.) service station. The attendant called the fire department and Chief Bill Carleton responded and went to work. He delivered the child in the truck, then mopped his brow. **"This is the second time I've had to do this,"** he sighed! . . . . Eight boys in New York City were injured painfully when their home-made Fourth of July fireworks—gunpowder in a soft drink bottle—exploded and hurled broken glass into their legs and arms. . . . Thirty were reported dead, hundreds injured and many fires caused by a tornado that ravaged the Pittsburgh (Penn.) region. . . . Fire destroyed the ball park of the Baltimore Orioles in Baltimore (Md.) with loss of trophies and uniforms. . . . Hard on the heels of the tragic Ringling Brothers and Barnum & Bailey Circus fire, with loss of life of over 160, came the fire in Elitch's Gardens "tunnel of love" Denver (Colo.) which killed at least six persons, four of them soldiers and their wives, and destroyed the Gardens. Roof of the "tunnel" a three-block long structure, was tar-paper! . . . Police of Montreal, (Que.) were put on alert in several districts of city and its suburbs as authorities attempted to trace the cause of week-end fighting between servicemen and zoot-suiters. . . *C. Edward Leasure, Civil Aeronautics Board, Washington, D. C. predicts there will be* 300,000 *private airplanes in the U.S.A. six to ten years after the war.* . . . The National Board of Fire Underwriters is sponsoring a radio program over WJZ and 70 other stations, the subject being the national fire protection situation. The commentator is Leland Stowe, reporter and news analyst; the time Saturdays at 7:15 EWT. . . . It was learned **that 11 of** the original members of the Organization of the General Slocum Survivors are living. The General Slocum, excursion boat, caught fire and sank in the East River, New York City on June 15, 1904 and 1,031 persons perished. . . . Firemen of H & L 111, N.Y.F.D. carried their salary cash with them on the day they were paid when they rolled to a box alarm. When they returned they found the firehouse had been ransacked . . . Poison ivy to the householder of Hartford (Ct.) who, located in the immediate vicinity of the tragic circus fire garnered about $200 at the expense of panic-stricken escapes, by charging them as much as $1 per telephone call for the use of their telephone. . . . Juvenile delinquents of New York City have done thousands of dollars worth of damage to public schools. One of the tricks is to empty all the fire extinguishers onto torn school books. . . . Serious forest fires which drove over 1,500 persons from the area and burned a number of small communities in the Val D'Or, Quebec mining districts, were finally controlled—by nature's rain. . . . Fire Chief, Chief George Sinclair, Toronto (Ont.), told the Royal Commission on Public Halls, his city, that bingoes were a "nightmare" to him because they were "an extreme hazard." . . . Fire that threatened Birmingham's (Ala.) City Hall was brought under control by more than 20 companies after stiff battle . . . In Stillwater (Okla.), V. A. Doty, driving his car through 100-degree heat, felt a tire on his auto go flat. The next moment he saw it blazing. Some heat! . . . City Council of Lebo (Kans.) voted to pay $2 for each fire to the person who pulls the "fire wagon" to the scene. The "wagon" can be hooked on any automobile and the first person backed up to the fire station door receives the $2. Don't crowd, gents! . . . A tipped over vigil candle set fire to the chapel of St. Anthony's Orphanage Kearny (N. J.), wrecking interior of the building, routing 128 girls from smoke-filled dormitories. . . . When he used a blow torch on fish-oil barrels, in a vitamin products plant in Ossining (N. Y.), resulting explosion caused death of Frederick L. Secor of Scarborough (N. Y.). . . . The Vamps of Prospect Park (Pa.) Fire Department were preparing to adjourn their regular monthly meeting. *"We're all here now and all we need is a fire,"* someone remarked. The telephone bell jangled—yeah, you guessed it—the lads hustled to extinguish a blaze in a rathskeller—of all places! (Thanks JWC) . . . *J. J. O'K: yes, we have a record of men being overcome in a caffein tank. Several years ago, four men were overcome, while cleaning out a* 50-*foot tank used as caffein extractor in Brooklyn* (N. Y.) *Firemen with masks rescued the victims, although one fireman who attempted rescue without a mask was himself knocked out.* . . .

Photo by Bill Herles

Truck 4 Goes to the Dogs!

Tiny is the name for this great dane of Hook and Ladder 4 of New York City. Tiny had seven pups, but two died. Here she is with the rest of her family. She is believed to be the only great dane ever to be a mascot in any firehouse.

SOLID STREAM OR FOG



Get BOTH with

BARTON-AMERICAN
FRONT MOUNTED PUMP

AMERICAN-MARSH PUMPS

GET DOUBLE DUTY FROM YOUR TRUCK

This new, high pressure, patented Barton-American front mounted pump is the practical solution to the water and fog problem. High pressure fog has proven to be highly effective in fighting certain classes of fires but a solid stream is still essential in combating the common, everyday type of fire.

With this ONE CENTRIFUGAL PUMP you can do BOTH! You can throw the finest, high pressure, all-smothering fog one minute and in the next instant, using a regular 1" nozzle, throw 200 gallons per minute at standard fire stream pressures.

Ask for complete information about this dual-purpose fire fighter that puts fog and volume within the range of even the most modest budget!

CENTRIFUGAL DUPLEX, TWO-STAGE MIDSHIP MOUNTED

High pressure performance, even when unit is used to pump gritty water. Constructed to stand up under the most rigorous fire department service. Impellers mounted on individual shafts—break down of one pump still leaves one for service. 250 pounds pressure at engine speeds equal to 30 M.P.H.—not possible with conventional two-stage pumps. Capacities to 750 GPM.

Write for Bulletin 8731F

AMERICAN-MARSH PUMPS INC.
BATTLE CREEK, MICHIGAN

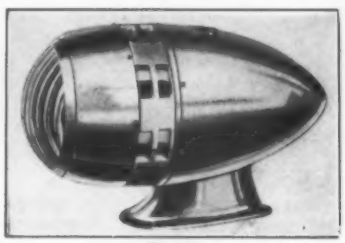
H.O.R.

Combination

LIGHT

and

SIREN



NOW AVAILABLE

NOW you can purchase H.O.R. equipment for your apparatus or officers' cars. Combination lights and sirens, flashers, floodlights and other equipment for fire department safety. Protect your own! Get the best the field offers—specify H.O.R.

Write for folder

H. O. R. CO., INC.

10 BROAD STREET

Stapleton, Staten Island, N. Y.

New Powers Granted to Chief of Insular Fire Service

Broad powers to prescribe safety and fire prevention regulations are granted to the Chief of the Insular Fire Service in a bill signed recently by Governor Rex Tugwell of Puerto Rico, amending Act No. 158 of May 9, 1942, establishing the Insular Fire Service.

The following paragraph is added to the Section defining the duties of the Chief:

The fire chief is hereby further authorized to establish and prescribe rules and regulations for the observance of proper safety conditions and the prevention of fires in places devoted to amusements and sports, in industries, in commercial establishments, in buildings devoted to public exhibitions or spectacles, in residential apartment houses, on public highways, and in homes, and these rules and regulations, after being promulgated by the Governor and published in two newspapers of general circulation in the Island, shall have the force and effect of law. The violation of any provision of the rules and regulations established by the fire chief and approved and promulgated by the Governor shall be punishable by a fine of not less than five (5) dollars nor more than one hundred (100) dollars, or in default thereof, by imprisonment in jail for a term of not less than five (5) days nor more than ninety (90) days, or by both penalties, in the discretion of the court."

Two new sections authorize members of the Insular Fire Service designated by the Chief to enter and inspect "all places devoted to industrial occupations, amusements and sports, to buildings devoted to public exhibition or spectacles, and to apartment buildings and houses under construction," and prescribe penalties for interference with members of the service authorized to make such inspection.

Another bill signed by the Governor, amends Act No. 317 of May 15, 1938 to include the Insular Fire Chief as a member of the Accident Prevention Council, and to provide that representatives of the Council, including officials of the Insular Fire Service and employees of the office of the Superintendent of Insurance, shall have free access, for purposes of inspection, to places enumerated in the section added to the Act establishing the Insular Fire Service.

Two Alarm Fire Strikes Saginaw Business Building

A two-alarm fire on June 29 swept through a building occupied by the Cal-Wood Specialty Company, a drug supply house; an A & P supermarket and a branch of Lee & Cady, wholesale food dealers, in Saginaw, Mich., causing damages estimated at $175,000.

The first alarm was sounded at 9:03 P. M., the second four minutes later. Three additional companies, including the aerial truck, also were called. At the height of the blaze fifteen hose lines were pouring thousands of gallons of water a minute into the flames.

Fast work by firemen saved the Strobel Brothers store. The only damage to the store occurred when the north wall of the adjoining A & P supermarket fell, caving in the roof of the Strobel store's storage room.

Fire Chief Bender said the fire, the cause of which has not been determined, apparently started on the second floor of the Cal-Wood Company.

The second floor of the Cal-Wood Company was filled to capacity with supplies, including school supplies and chemicals. The fire apparently smouldered for hours before breaking into flame. Chief Bender said firemen who were sent to the roof of the building to chop a hole for ventilation, felt the roof sag beneath them and immediately hurried to safety. A few minutes later the roof fell in and flames and sparks shot high into the air.

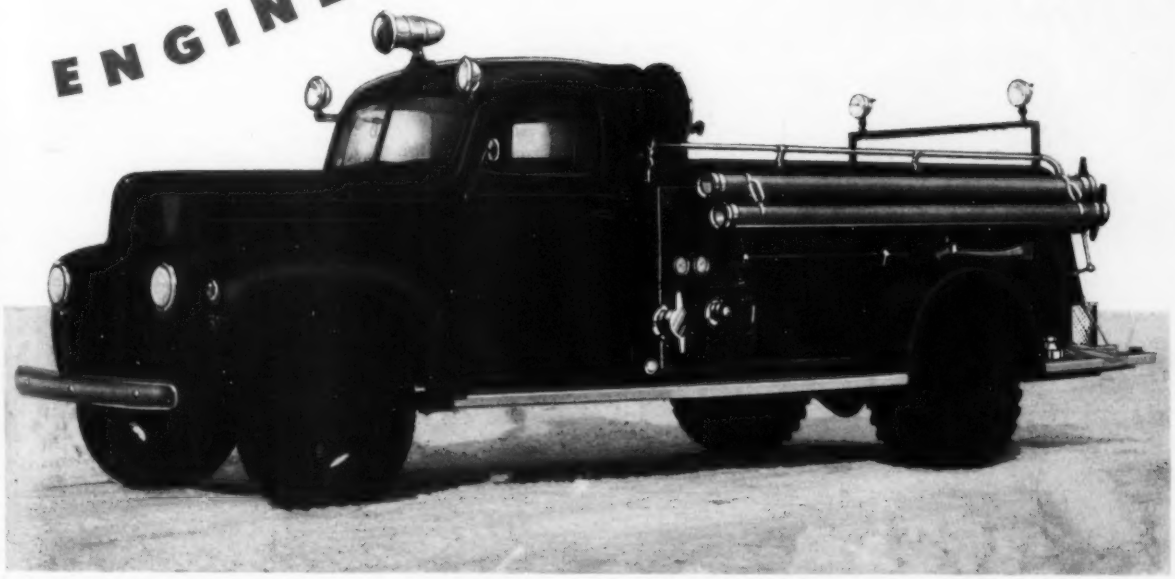
One engine company remained at the scene all night and small remnants of fire were being uncovered the next morning by firemen working in the debris.

Fire Truck Damaged in Mexico City Riot

An authorized meeting of the National Proletarian Front on July 20 at the Central Plaza of Mexico City resulted in a riot in which several firemen were injured and a fire truck destroyed. Here, two firemen from the group ordered on the scene by police seek shelter in front of their truck as rioters hurl stones at them. The meeting was called to condemn the National Insurance Law.

AMERICAN FIRE APPARATUS

ENGINEERED FOR SERVICE



AMERICAN FIRE APPARATUS has always stood squarely for one thing—sound engineering to insure dependability. Today, American apparatus is used extensively by the armed forces and by thousands of fire departments—proving the value and success of that policy. American sales engineers offer you years of experience in selecting, from a wide range of equipment, the best for your particular fire-fighting needs. Modern, trim, compact American fire trucks are built around the best pumps in the industry. Any piece of American apparatus you recommend will be a credit to you and your department for years to come. Ask for our new booklet showing our various models in color.

STRATEGICALLY LOCATED FOR SERVICE!

A glance at the map at the left will show why American can give you fast and efficient service. Located in the geographic center of the fire-fighting equipment manufacturing district, American can draw parts and supplies from comparatively short distances to meet the ever increasing demand for standard and special built American Fire Apparatus.

Be Sure to Call on Us at the Convention!

American Fire Apparatus Co.

BATTLE CREEK, MICHIGAN

Kindly mention FIRE ENGINEERING *when writing advertisers*

FLINT FLEX
TRADE MARK
"COMMANDO"

Patents Granted and Pending

THE NEW PLASTIC
CAIRNS HELMET

A NEW DESIGN

The "COMMANDO" combines the best features of the regulation and drop brim styles, with new advantages distinctly its own. The skull, shaped to give a solid support for the front piece, eliminates the old "pocket" and gives greater clearance over the forehead. The embossed ribs give great structural strength without added weight, and will resist heavy blows without crushing. A new adaptation of the famous CAIRNS CUSHION LINING, with or without earlaps, permits easy removal for cleaning or renewal.

A NEW MATERIAL

FLINT-FLEX is a composition specially developed for this purpose—a hard, fracture-resisting material that deflects blows even from sharp-edged objects, yet has a "temper" or flexibility that prevents cracking. It is a nonconductor of heat and electricity, and is not affected by water or chemicals ordinarily encountered at fires.

Write for Catalog #31G

CAIRNS & BROTHER
CAIRNS
FLINT FLEX
HARDNESS TO RESIST BLOWS
FLEXIBILITY TO AVOID CRACKING
HELMETS
NEW YORK, N.Y.

444 LAFAYETTE STREET
NEW YORK 3, N. Y.

Fire Protection of Daly City

Back in the days of vaudeville, a comedian in Chicago was always sure of a laugh if he mentioned Cicero and all he had to do to get a laugh in San Francisco was to mention Daly City.

Vaudeville died and so Daly City doesn't get the free plugs it used to. But it's still on the map and doing nicely, thank you. And, of interest to readers of FIRE ENGINEERING, it has a mighty pert little fire department.

Daly City is in San Mateo County, California, just south of the San Francisco city limits. It's strictly a residential city with a small business section. Its area is only 3½ square miles. You can call it one of San Francisco's bedrooms if you please, people won't mind.

But it's no poor relative and no parasite when it comes to city government. It has its own police, fire, water and other departments. And it does a pretty good job of taking care of itself.

City Employes Act as Firemen

Its fire department is strictly volunteer. Yet, in a sense, it is not. All city employes (women excluded) double in brass as firemen and mighty good ones, too. There are 85 such men and all are well trained.

Chief of the department is A. P. Chesney, an employe of the State Harbor Commissioners whose daily work takes him to the San Francisco waterfront.

Second in command and acting chief during most daylight hours is A. J. Bodien. And just in case anyone thinks Mr. Bodien has a sinecure as assistant chief, let it be noted holds a total of seventeen city jobs.

Many of them by their nature are of aid to Mr. Bodien when he discards the clothing he uses on sixteen of them and dons the rubber coat and helmet of assistant fire chief. For example, he is superintendent of the water department, chief building inspector, plumbing and heating inspector, in charge of the fire alarm system.

Daly City used to have nine pieces of equipment. They were not big, imposing looking trucks all shiny with brass and fancy doodads. Most of them were rebuilt Dodges and Locomobiles equipped with hose bodies and small equipment. These pieces were rather small and were quartered in small, private garages, for the most part.

But the city wasn't satisfied and so, several years ago plans were made to get bigger and better, albeit fewer pieces of equipment, quarter them in small, regular fire stations in strategic locations.

At the same time, farseeing city officials and leading civic minds organized a disaster preparedness committee. Strangely enough, the committee didn't play pinochle, go bowling or spend its time drinking beer. It rolled up its sleeves and went to work so that when Pearl Harbor happened, all that remained to be done was issuance of badges and equipment, and that took only a matter of several hours.

Befitting as a reward for farsightedness, delivery of three new fire trucks was made the day before Pearl Harbor so that when the news came we had been attacked at Hawaii and other places, Daly City had on hand the last pieces of equipment necessary to complete rehabilitation of its fire department!

A total of five pieces of apparatus now comprise the regular department. Two of them are fitted with 600 g.p.m. pumps. The third is a 550 g.p.m. pumper, the fourth a squad wagon equipped with a 200 g.p.m. pump and the fifth a truck carrying ladder equipment. Use of pumps is not always necessary for average hydrant pressure is 95 pounds.

The three pumpers carry short extension ladders, roof ladders, hose and small equipment. Each is equipped with a 350 or 400 gallon water tank, booster pump and hose.

The squad wagon carries no ladders and only a small amount of hose, but is fully equipped with an inhalator, masks, first aid equipment and other rescue apparatus.

The ladder truck is equipped with a 40-foot extension ladder as well as other smaller ones, all that is necessary where nearly all buildings are story or story-and-a-half in height.

All the replaced equipment has been turned over to Civilian Defense and is ready to go to work. One such truck, formerly used as a chemical, has been outfitted with an OCD 500 g.p.m. skid type pump. Another has been outfitted with an OCD front mount pump. Two OCD trailers complete the reserve equipment.

Four New Fire Stations

The city now has four new fire stations housing the regular and auxiliary equipment although some of the latter is located outside the regular stations.

Fire alarm system consists of forty-six boxes, with registers in the firehouses and quarters of the chiefs. In addition, three air horns located strategically bleat out the box number, first digit of which indicates which of the six districts the fire is in and the second indicating the exact location.

A box brings response from the two nearest stations with other stations standing by. Men receive remuneration for each call or standby, being paid from a revolving fund set up for that purpose by the city.

Mutual Aid with San Francisco

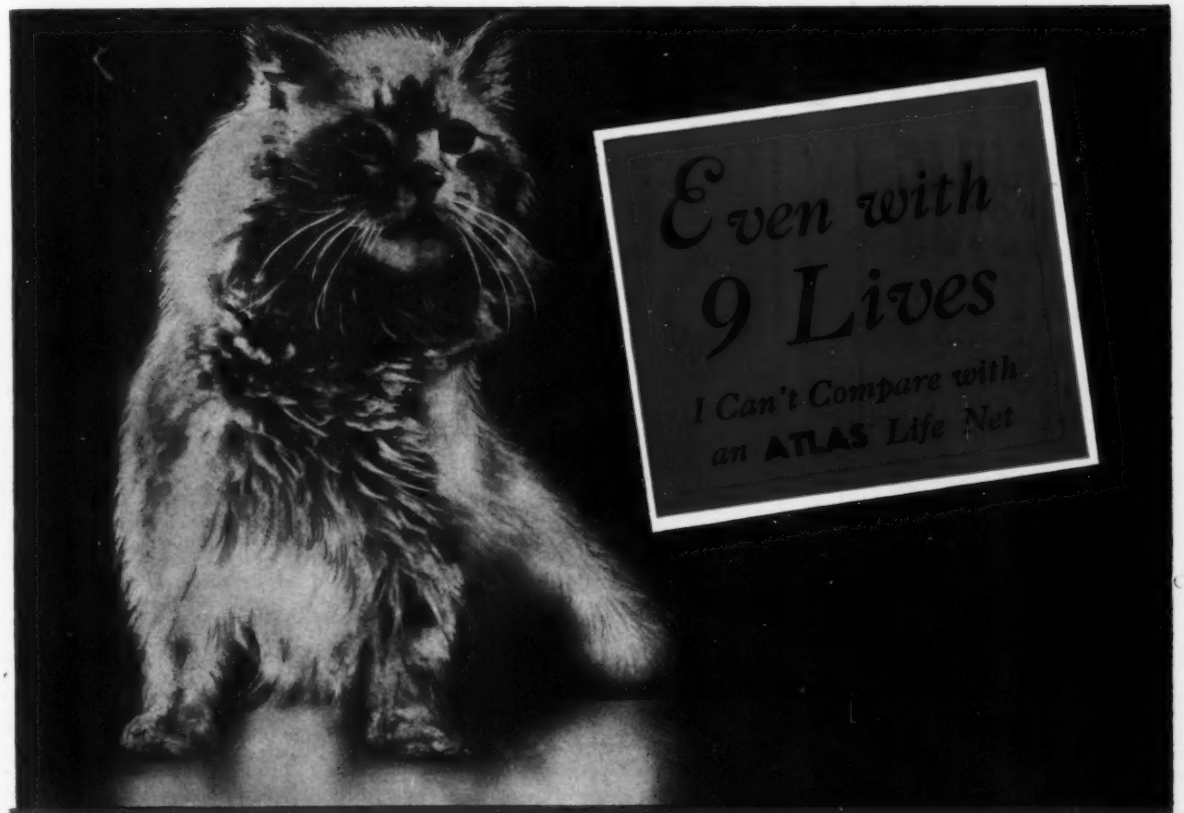
There is never any quarrel about fires on the line that divides Daly City from San Francisco. Companies from both cities "take in" the fire. San Francisco even has one box, 8367, Evergreen and Winchester, located within the Daly City city limits.

Contractors erected a large number of homes in what was then the "Crocker Amazon Tract" with a few of them just over the county line. San Francisco, never a city to quibble over fire protection, installed a box there.

But Daly City prides itself that it has never had to ask for help. It is equally proud of the fact that its big brother to the north is always ready, willing and able, just in case. And just to keep the record straight, should San Francisco ever need equipment, it would be on the way from Daly City as soon as the air horns bleated out the call.

Yes, maybe Daly City used to be the butt for vaudeville comedians' jokes but the DCFD is no joke and can prove it!

BOB GREENOCK.



An ATLAS LIFE NET has many times 9 lives!

DUAL SHOCK ABSORBERS: Scientifically designed with a recoil mechanism similar to that used in modern artillery. Uniformly spaced on the net frame, with shock absorber rods in position, ready to instantly distribute the initial force of impact which in turn is absorbed by the 32 dual shock absorbers assembled on the complete frame.

YOU may not have realized it, but, the ATLAS Life Net has saved over 9 lives at one fire alone. The ATLAS Life Net is made to save life. The ingenuity, the skillful workmanship, the ruggedness that goes into an ATLAS Life Net assures its being able to take more impact, safely, than is possible with any other net yet devised.

CHIEF—saving life is your first duty. Is the net you are now using old and outmoded—can you trust it when the emergency comes? If there is any question about the nets you now carry, you owe it to yourself to get an ATLAS. They are available.

ATLAS SAFETY EQUIPMENT CO., INC.
26 WARREN ST., NEW YORK 7, N. Y.

PARADISE
HYDRAULIC DIFFUSION SPRAY HEADS

FOR ALL PURPOSES

Paradise nozzles have been proved by six years actual fire service without a failure.

Primarily, Paradise Heads are extinguishing nozzles—much more than just nozzles to be used in approaching fires.

Write today for full details and performance data on this line of nozzles.

Covered by U. S. Patents 1922259; Re. 19913; 2284443; 2292794; 2254751.

PARADISE MFG. CO.
3165 S. PENNSYLVANIA ST.
INDIANAPOLIS 44, IND.

Why Fire Engines Are Red?

Time and again the question has been asked: Why is red the traditional colour for fire engines and other appliances used in the prevention and extinction of fires? The usual answer is to the effect that it is the colour which stands for danger. After many years of research in connection with this query I have discovered that this fire-colour of so many lands has a much greater significance than that.

In the language of colour, red is the symbol of fire. The fire-dragon of Indian mythology was red in colour and belched forth red liquid. The annals of antiquity tell us that red was the colour of combat and that the Spartans were shrouded in red winding sheets. Pliny tells us that the (colleguim fabrorum) or firemen's guild were dressed in red, the symbol of their office. In 21 B. C. Augustus had a fire brigade equipped with hamae, or leather buckets coloured red.

It will thus be seen that red coloured fire engines and appliances are in keeping with the best traditions of firefighting antiquity.

We now come to the material question of the use of the colour red in this connection. The fire engine, tender, or escape well done up in vermilion and picked out in gold and colours are more than vehicles of style and appearance roaring along the street to the warning tinkle of the fire bell. These same machines in the protective colouration adopted in days of non-frontal warfare do not create the same serious impression to my mind. And why it may be asked? The answer is a psychological one.

Colour has no material substance; it is a mere sensation, and as the retina of one's eye is composed of numerous nerve-elements which register each colour in primary order; red, or vermilion being the premier, this physiologically creates a stronger impression on the brain than any other.

The two golden principles of fire prevention and fighting are caution and quick alarm. Green may be the colour of caution, but psychologically I think that those fire prevention notices inscribed in white letters on a vermilion ground arrest the attention of the careless more forcibly. The same applies to the location of the chemical fire extinguisher in its vermilion shell, the signal red fire bucket, etc.

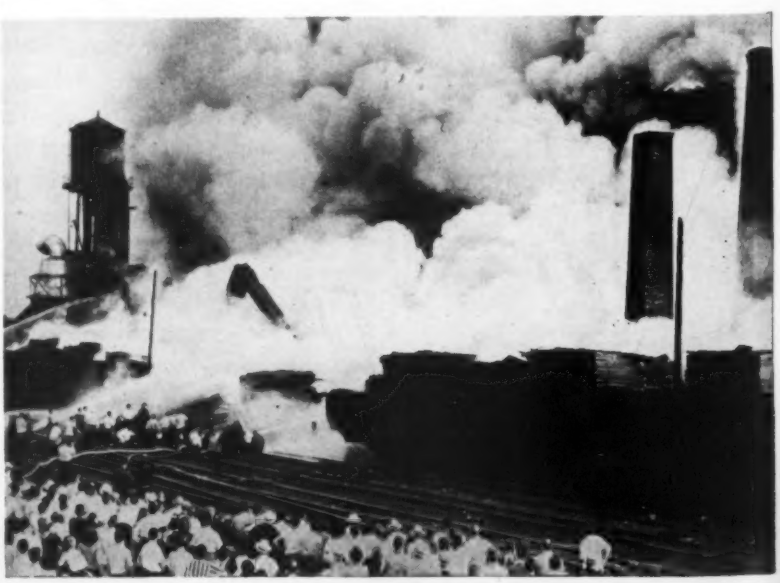
I have found by experience that metallic fire escapes painted red are better known to work people in particular factories than those protected from corrosion by other coloured paints and their exits kept free. Here again colour does count in useful impression.

Again the vermilion garnished fire fighting vehicles do make the urgency of their mission felt by other users of the road and thus time, that valuable asset to bringing an outbreak under control, is saved. A writer who has made a special study of the timing of mail vans in an article on the subject of "Royal Red" as an aid to speed, reckons that the "clear the way" impression of this colour saves thousands of valuable postal hours in the year. He also states that the number of accidents to vehicles of this description are on an average very low as compared with others, and adds "red is a fender colour, it is a speaking caution to both drivers and pedestrians."

The red doors of the fire station also speak to us in their own way. They tell us that all is standing ready and in the same way the glowing fire alarm post assures us of immediate fire fighting aid.

Yes, red in the service of fire extinction speaks a language of its own and imparts its impressive message even to the most careless beholder.

COLIN JOHNSTON ROBB,
Belfast, Ireland.



Chicago Plastics Plant Burns

Smoke billows hundreds of feet into the air as flames consumed the plastics-making Boynton and Company plant in Chicago, Ill., on July 9. More than half the city's fire apparatus was summoned to control the fire, which spread to a lumber stockpile (right).

The NEW YORK FIRE DEPARTMENT HAS EMPLOYED Link RADIO UNITS SINCE 1939

VAL. FENDRICH, Chief of the Bureau, Fire Alarm Telegraph, New York City and his Link two-way radio equipped car. The Link radio installation was made in 1939 and has been giving trouble-free service for almost five years.

In the isolated Richmond Central Office, New York Bureau of Fire Alarm Telegraph, St. George, Staten Island. Left, **Thomas T. Weber, Chief Dispatcher,** spots location on the huge map and **E. C. Chamberlain, Supervising Dispatcher,** transmitting on the Link type FMTR-W headquarters unit **(WHGH),** handling emergency situation with the central office of Fire Department in Manhattan. This completely portable, self contained emergency unit is battery operated and independent of any power failure.

When operating from within a building no outside antenna is required at any time, as can be seen in this installation. The antenna whips are mounted directly to the weatherproof cabinet and will work anywhere, indoors or outside as the situation demands.

TELEPHONE CHelsea 2-1100

ARMY E NAVY

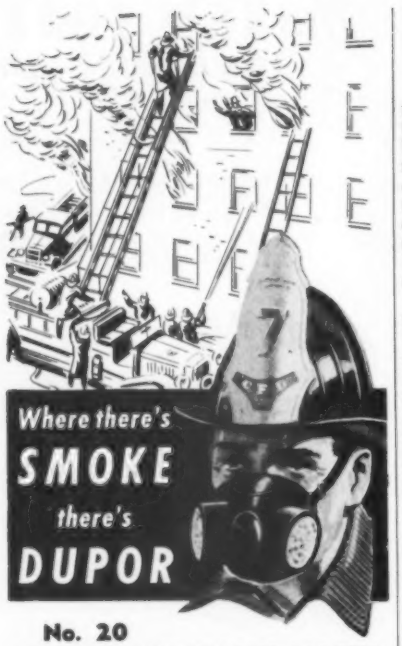
WRITE FOR CATALOG

ENGINEER • MANUFACTURER

Fred M. Link

125 WEST 17th STREET • NEW YORK 11, N. Y.

PREFERRED FM RADIO COMMUNICATION EQUIPMENT



No. 20
TWIN SPONGE SMOKE MASKS

Double protection for "smoke-eaters." Double sponges filled with water provide cool, smoke-free breathing. Soft rubber mask gives air-tight fit!

SAMPLE sent for $2.25

H. S. COVER, 68 Chippewa St., South Bend, Ind.

DOUBLE SERVICE
with
BI-LATERAL

This installation shows the position of the rubber lining in BI-LATERAL FIRE HOSE when held in a flattened position between calls into service. This is why we can save a city one replacement, because this hose will give double service of any hose constructed under the old method.

Also we can load 25% more on the apparatus bed actually making an $8,000 truck loaded with Bi-Lateral construction, cheaper than a $7,000 one loaded with other construction.

Here's the new DROP-FORGED rocker lug coupling (not cast bronze) with the swivel protecting feature.

BI-LATERAL FIRE HOSE CO.
20 No. Wacker Drive Chicago, Ill.

Fire Problems of County-wide Fire Department

(*Continued from page* 535)

the male auxiliaries. Their interest in the Auxiliary Fire Service has been a boon because of the critical shortage of manpower in the area. While the total of auxiliary firemen does not represent the maximum number to be desired, the enrollment results in comparison to enrollments accomplished by the other Fire Protection Agencies in the County are gratifying."

Spence D. Turner, forester, fire, fish and game warden for the County of Los Angeles, was born in Denver 54 years ago. He received his early education in England and Germany, returned to Southern California to complete his schooling. He became engaged in construction and engineering projects in Los Angeles County and for a short time was with the U. S. Forest Service in fire control work.

In 1920 the late Stuart J. Flintham, then the County Forester, also became County Fire Warden. One of his first official acts was to hire Mr. Turner as a fire control, fish and game warden. That was on July 2, 1920 and from that time on Mr. Turner has been identified with the present Department of Forester and Fire Warden. In April, 1921, Mr. Turner was made a regular Assistant Fire Warden and, in November of the following year, promoted to Chief Assistant. Upon Mr. Flintham's death in 1925, Mr. Turner was made acting head of the department and soon after appointed as County Forester and Fire Warden, which position he has held ever since that time. At the present time he also carries the titles of "Chief Engineer, County Fire Protection Districts" and Regional and County Fire Coordinator, State War Council."

Joseph J. Davis, whose good cooperation made this article possible, is Chief Assistant County Forester and Fire Warden; Deputy Chief Engineer, County Fire Protection Districts; and Substitute Regional and County Fire Coordinator, State War Council.

Strangely enough, Mr. Davis, too, was born in Denver and within eight blocks of Chief Turner's birthplace, although the dates of their births are several years apart. Mr. Davis left Colorado when he was 18 after attending local schools, ultimately receiving a degree in civil engineering. While assistant city engineer in a Southern California city, he became interested in fire protection and for a considerable period was a volunteer fireman. Under Civil Service examination in 1920 he became affiliated with the department as Assistant County Forester and Fire Warden. Three years later he was made Fire Prevention Engineer and organized the County's fire prevention bureau. At the time Chief Turner was elevated following the death of Chief Flintham, Mr. Davis was made chief assistant to Mr. Turner and has held that position since.

Rhode Island Improves Forest Fire Fighting Methods

Under a new system installed on the recommendation of Governor J. Howard McGrath of Rhode Island, to combat woodland fires in that State, several recent fires in the western side of Rhode Island have been fought in a more efficient manner.

Although Rhode Island, smallest and the most heavily industrialized of the 48 states, would seem to be the least likely place in the country to have a forest fire menace, the fact is that large parts of the State are wooded and the annual fire loss runs into high figures. In 1942 the loss was estimated at one half million dollars.

Eric G. Jacobson is the State's new Chief Fire Warden and in complete charge of the system now in effect. A variety of new techniques have been worked out, such developments as walkie-talkie radio sets have been called into use, and the annual appropriation for fighting the woodland fires has been increased from $25,000 to $57,000.

The long drought this spring has made conditions dangerous in the woodlands, Warden Jacobson explained, and in many sections the mulch covering woodland ground is dry as tinder to a depth of a foot and will burn beneath the surface if once ignited.

Considerable credit for the fire fighting record in Rhode Island this year is given to groups of servicemen stationed in this area who have been called out to help fight the fires, joining the professional and volunteer fighters. In addition, the United States Navy made available an observation plane during the larger blazes.

This plane soared over the area spotting fresh outbreaks and sending the word by radio to a control point on the ground.

By proclamation of Governor Sumner Sewall of Maine, issued on June 2, the vast forests of that State, were closed to fishermen, except those using boats, in an effort to prevent further outbreaks of fire, which to that date this year, already scarred over 5,000 acres.

Widespread fires raged in Maine as Governor Sewall's ban took effect. The worst in Piscataquis County, east of Moosehead Lake, had blackened more than 8,000 acres of pulpwood since May 30. More than 10,000 cords of stacked wood at Whitneyville, Me., owned by Hollingworth and Whitney, paper manufacturers, were in the path of the flames at one time with 200 men engaged in fighting this fire. A part of the National Forest situated in the State of Maine was closed by order of White Mountains Forest Supervisor A. H. Anderson of Laconia, N. H. THOMAS F. MAGNER

Fires Losses Up in First Six Months

Estimated fire losses of $30,555,000 in the United States in June brought total losses for the first six months of the year to $214,052,000, an increase of $23,538,000 over losses for the first half of 1943, it was announced by W. E. Mallalieu, General Manager of the National Board of Fire Underwriters. The estimates are based upon incurred losses reported to the board by member companies, plus an allowance for unreported and uninsured losses.

The June losses were $3,701,000 or 14 per cent higher than losses of $26,854,000 in June, 1943, and $2,260,000 or 7 per cent below losses of $32,815,000 in May of this year. Losses in the twelve months period ended June 30, 1944 totalled $403,773,000 as compared with $334,871,000 for the year ended June, 1943.

FIRE.... and the draw open!

Without radio in his car (and throughout his department), this fire chief would be cut off. *With* RCA 2-way radio in his car, in every fire station, and on every piece of apparatus in his department, everything is under control. He can immediately issue orders... and maintain contact with the situation.

EVEN a moment's thought brings to mind many other conditions where radio is extremely important in fire department service. With radio, fire apparatus sent to a wrong address can be redirected en route. When two fires occur at the same time, the fire officer at one fire can communicate at any moment with the fire officer at the other, or with the Chief or Commissioner at headquarters. With radio, additional apparatus, special equipment, ambulance or police assistance can be summoned at any time without delay.

With the need of radio in fire departments so obvious, is it any wonder that more and more city and county officials are interested in installing modern RCA 2-way radio equipment? RCA Emergency Communications Equipment engineers will help you plan such a system now — AM or FM — for postwar installation.

RCA

BUY MORE WAR BONDS

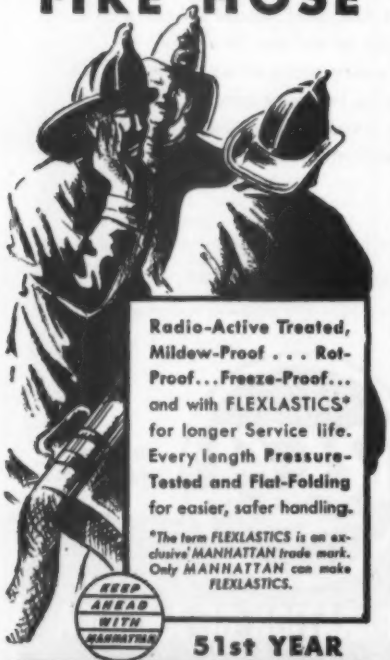
RADIO CORPORATION OF AMERICA

JANESVILLE QUALITY
TURN OUT CLOTHING

Our turnout suits are giving excellent satisfaction in most of the large fire departments throughout the U. S. and
THERE MUST BE A REASON WHY SO MANY FIREMEN INSIST ON JANESVILLE QUALITY

NOW AVAILABLE!
We can now supply old type ¾ Felt-lined Firemen's Boots.
JANESVILLE APPAREL CO.
JANESVILLE, WIS.

MANHATTAN
FIRE HOSE



Radio-Active Treated, Mildew-Proof . . . Rot-Proof . . . Freeze-Proof . . . and with FLEXLASTICS* for longer Service life. Every length Pressure-Tested and Flat-Folding for easier, safer handling.

*The term FLEXLASTICS is an exclusive MANHATTAN trade mark. Only MANHATTAN can make FLEXLASTICS.

KEEP AHEAD WITH MANHATTAN

51st YEAR

THE MANHATTAN RUBBER MFG. DIVISION
of RAYBESTOS-MANHATTAN, INC.
Executive Offices and Factories, Passaic, N. J.

Chemistry in Fire Fighting

(*Continued from page* 530)

others a soy-bean oil derivative and still others a mixture of ground glue and glucose. But, whatever the substance may be, its presence is imperative, otherwise the resulting bubbles would not be tough, the carbon dioxide gas would escape and the foam would disintegrate.

Flammable Substances

An attempt to link chemistry to the field of fire-fighting could be found wanting if we failed to entertain at least a superficial examination of some of the flammable substance which a fireman is likely to encounter, particularly the more dangerous ones.

Generally speaking, flammable substances are composed of hydrogen and carbon. They are known chemically as "hydrocarbons." Some materials, besides carbon and hydrogen, contain also oxygen, nitrogen and sulphur. Flammable solids liquids and gases have much in common, for as we learned in our brief study of combustion, under the proper degree of heat, a substance may easily change from one form to the other; that is, an inflammable solid or liquid may become a gas.

Liquid substances are considered dangerous if they have a low flash point. Such materials, under a comparatively low degree of heat will emit vapors which are capable of forming an ignitable mixture with air. Very often these inflammable vapors will become mixed with the surrounding atmosphere in such proportions as to be within their explosive range, that is, the concentration of gas will be such that an explosion will occur in the presence of sufficient heat or some other source of ignition.

Most flammable liquids are either alcohols or are coal tar derivatives or derivatives of crude oil. Some of the mor common ones include kerosene, gasoline, benzol, wood alcohol, ethyl-ether, carbon disulphide, and various naphthas.

Although at first glance, even a brief study of hazardous chemicals would seem to be an impossibly complicated task, actually this is not the case, for dangerous chemicals may be divided into definite groups.

Nitrates and Chlorates

For instance, there are the nitrates and chlorates. These may well be classified together. They are powerful oxidizing agents because, when heated, their oxygen is easily given off. When heated, they can evolve sufficient oxygen to support combustion, doing so independently of any oxygen in the air. This is the clue to their hazardous qualities. Though nitrates and chlorates themselves do not burn, in the presence of organic material, fire or even explosion may occur, for such organic matter can supply the fuel necessary for combustion. Thus, although of immense value when controlled, these chemicals prove most dangerous if carelessly stored or mishandled. They must not be allowed to come in contact with any combustible material.

Into another category we may place chemicals which are dangerous when wet. Sodium and potassium will decompose water to give off hydrogen gas and heat. They are particularly dangerous substances under such conditions, because the heat given off may easily cause the hydrogen gas to burst into flame or explode.

The various metallic dusts, such as aluminum, magnesium and zinc dust, when in contact with water evolve inflammable hydrogen gas and much heat.

Sodium peroxide, barium peroxide and other peroxides react with water to give off oxygen and heat.

Calcium carbide when wet reacts with water and the product given off is acetylene gas which is highly inflammable.

When wet, various acids become nuisances or even hazards. Sulphuric acid, especially when in large quantities, will splatter until diluted to a sufficient extent. In this process of dilution, much heat, and acid fumes which are injurious to the mucous membranes of the respiratory tract are evolved. Both nitric and hydrochloric acid in contact with heat will give off acid fumes which are definitely injurious. The fumes of hydrochloric acid, which in its impure form is known as "muriatic acid," will attack the mucous membrances of nose and throat.

There are one or two other chemical substances which should be at least mentioned. Nitric acid when heated gives off oxides of nitrogen. These fumes are sickening. They may cause dizziness, nausea, vomiting and sometimes death.

Nitrocellulose, a highly inflammable chemical material, will, in the presense of sufficient heat, burn rapidly and with explosive violence. Nitrocellulose is present in certain lacquers, various pyroxylin plastics, and some movie film.

Animal and Plant Substances

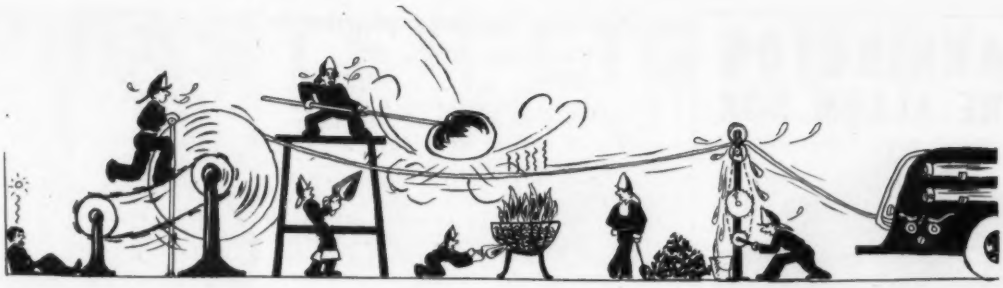
Finally, in his response to alarms, the fireman will often encounter burning animal and plant substances. We shall consider these briefly.

Plant tissues when involved in combustion, give off only two gases, carbon monoxide and carbon dioxide. Carbon monoxide is a definite hazard. Carbon dioxide, however, will cause no serious physiological effects, except that if inhaled in large quantities it may result in asphyxiation.

Burning animal tissues are a different proposition. They produce more poisonous gases than plant tissues and in greater variety. When present in a fire, they will give off poisonous fumes which include sulphur gases and the deadly oxides of nitrogen.

Conclusion

The preceding paragraphs have attempted to relate the science of chemistry to the field of fire-fighting. To call this material "Chemistry" would be presumptuous. In scope it has been limited to rudiments and to brief explanations. It is not altogether unlikely, however, that it may have served to whet the appetite of the curious. If it has succeeded in stimulating the desire for further research in the vast field of chemistry and its unquestionable relationship to the fire profession, then, a few quarts, more or less, of printer's ink will not have been spilled in vain.



Are YOU Drying Hose–The HARD Way?

Fire Hose COULD be dried this way, we suppose . . . but who wants to? It would be nearly as cumbersome and as much work as using the old-fashioned hose tower or rack . . . and probably take nearly as long to dry.

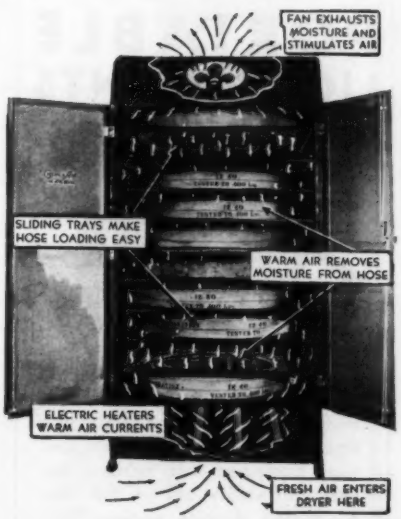
If YOUR department wants to protect its hose properly, in the quickest way, with the least effort; if you want ALL of your hose ready for service ALL OF THE TIME; if you want to save floor space in your apparatus room . . . you can have all this NOW by installing

CIRCUL-AIR THE AIR-CONDITIONING FIRE HOSE DRYER

A Peacetime Asset—A Wartime Necessity

CIRCUL-AIR USED EXTENSIVELY BY

Villages and Cities from 500 to 1,500,000; Army Bases and Naval Air Stations here and overseas; in most of America's leading AIRCRAFT, AUTOMOTIVE, TANK, SHIP-BUILDING, CHEMICAL, ELECTRICAL, TEXTILE, RUBBER and SYNTHETIC, ORDNANCE and other plants. Write for descriptive booklet, "Guarding America's Hose Supply."


FAN EXHAUSTS MOISTURE AND STIMULATES AIR
SLIDING TRAYS MAKE HOSE LOADING EASY
WARM AIR REMOVES MOISTURE FROM HOSE
ELECTRIC HEATERS WARM AIR CURRENTS
FRESH AIR ENTERS DRYER HERE

You Can Buy Your Post-War Dryer NOW

Immediate Delivery from Stock

THE CIRCUL-AIR CORPORATION

6339 East Palmer
Detroit 11, Mich.

HARRINGTON
FIRE ALARM BOX

HARRINGTON
FA-26

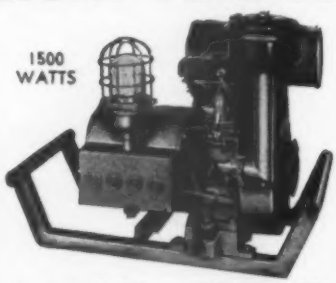
THESE high quality fire alarm boxes are made of cast aluminum inside as well as out. This makes for fast, light, easy installation and long life, free from corrosion.

They are equipped with quick action doors, made to meet every specific requirement, and are non-interfering of the shunt and successive type circuit.

HARRINGTON
SIGNAL COMPANY
MOLINE - - - - ILLINOIS

"U.S."
PORTABLE
LIGHT PLANTS

1500
WATTS



A new, lighter weight portable unit of 1500 watt capacity designed for fire department service. Equipped with carriers for easy portability out on the job. Air-cooled 4-cycle engine 2⅞" bore x 2⅝" stroke. 3.2 H.P. 2 gallon fuel tank. Quick starting.

LARGER SIZES AVAILABLE
Including 3,000 Watt Unit.

Write for Catalog

UNITED STATES MOTORS CORP.
430 Nebraska St. Oshkosh, Wis.

OCD Fire Fighting Equipment

(*Continued from Page 527*)

It is urged that they be earmarked for these services and that if they can make use of skid mounts, and even front-mounts as well as trailer type pumps, they be allotted these units.

3. Those OCD units in camps, industrial facilities, depots, institutions, and so on, the loss of which might in any way cripple or jeopardize the war effort, should be permitted to remain with such facilities as long as there is need for them. Also, communities along the continental coast line, which have stated their desire to retain the OCD units as long as there remains any threat of enemy attack, should be permitted to keep them.

4. The balance of equipment not wanted, or which might better be re-allocated, should be placed with consideration of protection of rural areas or those wherein there exists no organized fire protection. Where front mount or other pumps may have been disposed of by municipalities to rural or suburban areas where there is no fire protection, such equipment might be left there, provided of course, there is the necessary organization to use it to advantage.

5. Final recommendations on rural protection should be as specific as possible.

At the suggestion of the Committee, Chief Roi Woolley conferred with Col. White and Assistant OCD Director McNamee, in Washington. The high points of the surveys were shown and it was the opinion of these officials that the figures were in line with their own data. There was no disposition on their part to minimize the seriousness of the problem of disposing of the "excess" or "surplus" OCD equipment where it would do the most good, and the least injury. As long as the present Office of Civilian Defense exists or there is a Protective Product Division headed by Colonel White, the Fire Service will receive sympathetic consideration and support of its recommendations from this quarter. However, time marches on—there are already bills before Congress (not from the Fire Service) calling for disposal of this equipment. A Government that is already seriously worried about surplus war property may suddenly decide to throw this $36,000,000 of fire fighting equipment, or what remains of it, into the hands of the Surplus War Property Administration or some other Government agency. For this reason this still unnamed Committee is making all possible speed in its recommendations, which it hopes to present and have approved at the Conference of the International Association of Fire Chiefs, in August.

Army Warehouse Damaged by Fire

Fire of undetermined origin early on the evening of June 28 destroyed a U. S Army Signal Corps warehouse at the Presidio in San Francisco, Cal., and caused damage estimated at $100,000 before the Presidio Fire Department, aided by city fire companies under chief Albert J. Sullivan who responded to a third alarm from Box 4611, Letterman General Hospital, one of the few city boxes located within the military reservation, could extinguish it.

The fire was discovered shortly after 7 p.m. by Corporal O. E. Mortenson, on guard duty at the building. Quick action on his part saved three crates of records containing inventories of the contents of the wooden structure.

Firemen were hard pressed to prevent the flames from the warehouse, almost directly underneath the Golden Gate Bridge ramp, from communicating to some WAC barracks and other wooden warehouses as well as the motor pool nearby.

Chief Sullivan later received a letter from the commanding officer thanking him and the Fire Department for the good aid they gave.

BOB GREENOCK

Fire Equipment Landed on French Invasion Coast

Somwhere on the French invasion coast, Coast Guardsmen unload a water pump and fire fighting equipment from a landing craft. Fire apparatus is an important item in the supplies of the American invaders. It must be available to extinguish the conflagrations that are inevitable with war.

Chief Al Herring Ill

Word has been received that Chief Albert Herring of Murphysboro, Ill., recently suffered a severe stroke. At the time this issues closes for press, he is reported to be gaining satisfactorily at the local hospital.

Chief Herring has been an ardent worker for the International Association of Fire Chiefs for the past quarter of a century. As Chairman of Exhibits, he staged at the Portland Convention the largest array of exhibits ever held by the Association.

Dust Blast in Elevator Kills Six

Six employees were killed when a dust explosion wrecked the Aberdeen Grain Elevator in Midland, Ont., on July 9.

The blast caused by spontaneous ignition was followed by a "flash fire" which spread quickly throughout the entire building starting small fires at a number of places. The whole top section was blown out and when firemen arrived, the elevator was a mass of flames.

"MASTER-LIGHTS"

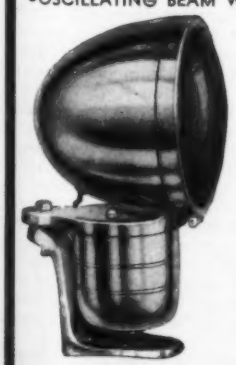
•FOR THE CHIEF—TYPE WS HIGH-POWER RECHARGEABLE LIGHT: Mile Searchlight, 250,000 c.p. emergency beam for 8 hours, or 20 hr. worklight per battery charge.

6" diameter true parabolic reflector. Special double filament bulb; 3-way switch. Weight, 11 lbs.

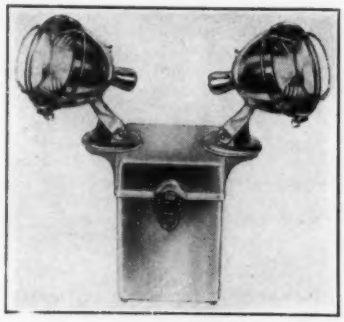
•SUPER-6—FOR THE OFFICERS—TYPE SUPER-6 HIGH POWER RECHARGEABLE LIGHT: Equal in power, burning hours, etc., to the WS but somewhat lighter in construction and does not have

the patented handle that keeps the weight always directly under the fingers. Height, 13 inches. Weight, 10 pounds.

•OSCILLATING BEAM WIG-WAG REDHEAD—TYPE #06, 6" diameter, and TYPE #08, 8": Put one on every car and truck. CLEARS YOUR SIDE OF STREET, TOO — for safer, faster, quieter runs.



PREVENT PANIC AND DEATH SAVE LIVES

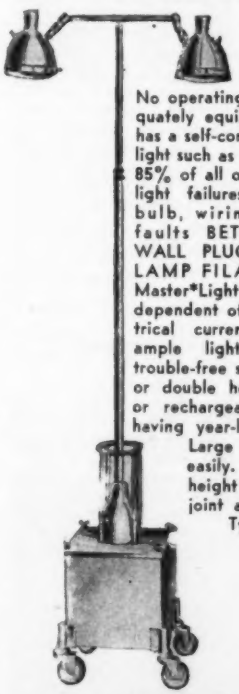


TYPE DUL MASTER*LIGHT (Automatic)

Road Houses, Factory Rooms, Loading Docks, Theatres, Lodges, Auditoriums, Restaurants.

Where continuous light must be maintained. On failure of usual lighting facilities Type DUL lights instantly illuminating 100' diameter circle with each lamp head. With special year-long shelf-life rechargeable battery and manual or automatic control.

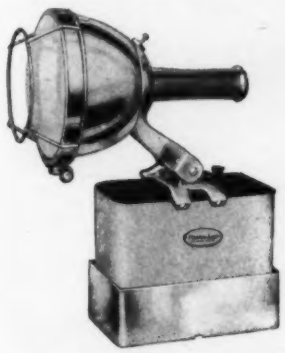
EMERGENCY LIGHTS FOR HOSPITALS, CONTROL ROOMS AND KEY POSITIONS



HOSPITAL MASTER LIGHTS: No operating room is adequately equipped unless it has a self-contained battery light such as Master*Lights. 85% of all operating room light failures result from bulb, wiring or switch faults BETWEEN THE WALL PLUG AND THE LAMP FILAMENT. The Master*Light is entirely independent of outside electrical current, yet gives ample light and long, trouble-free service. Single or double head, with dry or rechargeable battery having year-long shelf-life. Large casters roll easily. Telescopic height and universal joint adjustments. Type DHL

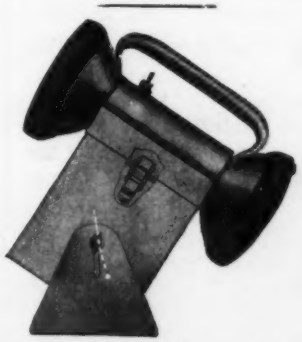
MASTER-LIGHT MAKERS

•TYPE F5: Uses dry cell Hotshot type of battery. Otherwise like the Super-6.



•FOR THE MEN—TYPE G-23: Watchmen and Firemen's Light. Rechargeable battery. Saves many dollars in dry batteries annually as watchmen's light. Two-filament

bulb, one for all night service and other for firemen, police, and watchmen's emergency uses. Weighs only 76 oz. Third-mile-range. With or without carrying strap.



•TYPE T&T 2-WAY with one red and one white light. Beam and red reflectors. Uses two No. 6 or telephone type dry cells. 1/5th mile range. Focusing knob. Sturdy rustproof steel case.

CARPENTER MFG. CO., CAMBRIDGE 39, MASS.

We shall appreciate your mentioning FIRE ENGINEERING *when writing advertisers*

WENTWORTH
FIREMAN'S UNIFORM CAPS
Union Made **Prompt Delivery**

No. 342

Wentworth Fireman Caps are made of the Highest Quality Standard Materials available and by the Best Skilled Union Craftsmen in all the New and Standard styles. Our 49 years of experience and skilled workmen guarantee you AMERICA'S GREATEST CAP VALUE in all WENTWORTH FIREMAN CAPS.

No. 441

Write direct for latest circular and prices or see your local dealer.

WENTWORTH-FORMAN CO., INC.
578b Washington St., Boston, Mass.
Manufacturers
Fireman Cap Specialists for Over 49 Years

SEALAND

Quality Built Fire Apparatus

Centrifugal Pumps —portable and truck mounted.

Trailer and skid pumps.

Automatic Fire Detecting Systems using our new "Copperseal" Fire Detecting Wire.

Note — Trailers for O.C.D. Skid Pumps.

WRITE TODAY FOR FURTHER DETAILS

THE SEALAND CORP.
SOUTHPORT, CONN.

With Our Readers

(*Continued from page* 559)

Departmental firemen are valuable to the regular "floating brigade" for in most cases the fire is extinguished before the regular squad arrives. These departmental firemen are stationary and are taught extinguishment methods for their respective departments only and do not answer other fire calls. Outdoor fire fighting demonstrations for departmental firemen pay good dividends for the men have a chance to get the "feel" of fire fighting tools and are taught to overcome fear of fire.

In plants where flammable liquids are used, they must be studied by the firemen as to flash points, percentage of explosive concentrations, unloading, storage, etc.

The firemen must also be familiar with electrical hazards such as lightning, static, arcs, heating and other causes of electrical fires.

Welding, one of industry's chief causes of fire, must be controlled by competent fire patrolmen. This can be accomplished by approved fire permits through the cooperation of the section engineers, chief engineer and others concerned. Each one must know beforehand all existing hazards. The firemen must then prepare the location for a safe job.

Proper storage of plant material is of prime importance to plant protection. Segregation of vital material outside of "hazard limits" must be established, for in case of fire, only a small part would be damaged or destroyed.

Inspections, the essence of fire prevention, must be taught the industrial firemen. They must know what to look for and where to find it and most important, what to do about it. Recommendations must be made that are sound. Here the firemen check the national fire codes for the correct answer.

If the industrial firemen are trained correctly, they are ready for any emergency. In the modern plant today will be found the problems that must be met to keep production running and production will win the war.

H. B. Morris, Chief,
Celanese Corp. of America,
Narrows, Va.

Questions and Answers

(*Continued from page* 557)

the pressure given to them by a hydrant. We will assume, for the sake of illustration that the rotary gear pump in this problem utilizes but one half of the hydrant pressure.

The pumper is developing 200 pounds and operating at half its capacity. Assuming that the engine utilizes half of the hydrant pressure, we'll have an available pressure of 237.2 pounds at the hydrant.

The nozzle diameter, we shall assume, for each line is 1⅛-inch.

N. P. = 237.2 ÷ (1.1 + .167 x 36)
= 237.2 ÷ 7.112
= 33.3 pounds.

Discharge at this pressure is 215.5 gallons per minute, which is well within the capacity of the pumper.

Answer 2: Here we have two parallel 150 foot lines of 2½-inch hose siamesed into a single line 1650 feet in length.

The two parallel 150 feet lines are equivalent to a single line 41.7 feet in length.

The total line is then equivalent to 41.7 + 1650 = 1691.7 feet of 2½-inch hose, single line.

N. P. 237.2 ÷ (1.1 + .167 × 33.83)
237.2 ÷ 6.65
35.7 pounds per square inch.

Answer 3: In this problem two parallel 500 foot lines are stretched from the hydrant to the pumper, and from the pumper a 1300 foot line of 2½-inch hose is laid and equipped with nozzle.

We will again assume that a 1⅛-inch nozzle is used.

We will further assume that no material help is given the pumper by the pressure at the hydrant, but plenty of water at satisfactory inlet pressure is furnished by the hydrant. We can further assume that the gravity head is still effective in aiding the engine. Thus the engine pressure will still be in the neighborhood of 237.2 pounds.

N. P. = 237.2 ÷ (1.1 + .167 × 26)
= 237.2 ÷ 5.442
= 43.6 pounds

Values of K on Small Lines

To the Editor:

What are the values of K for small tips on small lines?

H. L. R.

Answer: The values of K for small tips on small lines which give the best results are those employed with the formula E. P. N. P. × (1 + KL). These are as follows:

½-inch tip (2½-inch hose) .0115
⅝-inch tip (2½-inch hose) .023
¾-inch tip (2½-inch hose) .042
⅞-inch tip (2½-inch hose) .068

Taking Suction from a Hydrant

To the Editor:

A pumper is taking suction through a 4½-inch suction equipped with a 4½-inch nipple, from a 65 pound low pressure hydrant. The pressure at the discharge side of the pump is 150 pounds. Would hydrant pressure at the nipple be 65 pounds? When pump is operating, where is pressure pick-up?

J. B.

Answer: If a hydrant is supplied by a main of large diameter, there will not be a drop of more than about five pounds, from the 65 pounds static pressure, when the pump starts operating and water is taken from the hydrant.

The pick-up in pressure occurs within the pump. In other words, the pressure on the intake of the pump will be around 60 pounds, and on the discharge side, 150 pounds. This increased pressure is produced by the pump itself.

If a pump is operating from suction, all pressure produced at the discharge side of the pump is created by the pump. Incidentally, the smaller the opening on the pump through which water is discharged, the higher will be the pressure at the pump.

Were it possible to make a very large discharge port, for example, six or eight inches in diameter, the discharge pressure on the pump would be comparatively low.

We're Ready When You Are for—

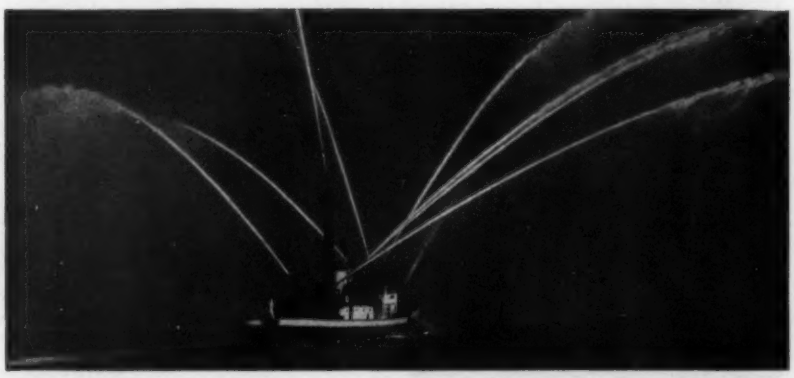
INVINCIBLE NOZZLES

MANY fire chiefs have known from experience that the fine workmanship that is put into Invincible Nozzles has paid them dividends in easier, more dependable and longer operating life. Now, added to extremely fine workmanship is a production set-up that will assure your getting the Invincible Nozzles you have been waiting for more promptly, when we return to normal. *Invincible* was the *original* nozzle of this type and is still the finest product money can buy.

Specify "Invincible Nozzles" by *name* when drawing up specifications for new equipment. The best is none too good for the fire service and the Invincible Nozzle is the best and finest ever produced.

F. N. McINTIRE BRASS WORKS
221 HIGH STREET **BOSTON, MASS.**

New York City has nine Invincible Nozzles on its million dollar fireboat, "Fire Fighter." These same nozzles are to be found on government vessels on all seven seas, and, of course, in hundreds of fire departments. The first nozzle of its type — and the best.



U. S. ARMED FORCES

FIRE DEPTS.

WAR PLANTS

Fyr-Fyter Extinguishers are helping protect our armed forces in the air, on the sea, and on land. Home front fire departments rely on Fyr-Fyter equipment to save priceless lives and protect property urgently needed in war plants. Fyr-Fyters back up firemen by instant and dependable service.

Stop taking chances. If you need essential equipment, write us today. We are prepared to advise and serve fire departments and war production plants immediately. Get the facts regarding Fyr-Fyter equipment for your protection.

Write today.
The FYR-FYTER CO.
Dept. 101, Dayton 1, Ohio

Fyr-Fyter

EDDY
Fire Hydrants

Are given preference by so many fire protection and water works men because they know that more than half a century of experience goes into their manufacture and they embody valuable and exclusive features.

Write for the Facts

EDDY VALVE CO.
Waterford, N. Y.

Fire Station Design

(*Continued from Page* 546)

to install numerous modern time and labor saving improvements along these lines.

DRYING HOSE: This subject has already been partly covered. Hose is the fireman's universal tool. It must be preserved. It must be properly taken care of. Here, the planner should know his "jackets and his couplings" so to speak. If the fire chief has ideas of his own, let him convey them to the planner.

FIRE ALARM COMMUNICATIONS: Measured by what is to come, our fire alarm systems are only in their infancy. Don't laugh at televison, at "piped radio" at short-wave, two-way radio, station-to-station, station-to-mobile unit, and mobile-unit-to-mobile-unit or to "walkie talkies." It is prophecied that the day is not far off when every fireman at work on the fire ground will be able to report by short wave to his commanding officer, or to a headquarters post, without leaving his work, or interrupting it. Chiefs will do well to provide for the tomorrows in this factor—and secure the suggestions of specialists. Let's put an end to having to load up attics in old fire stations with heavy batteries, boards and other equipment necessary for radio or other communications.

DRILL SCHOOL: No one today questions the importance of the fire department drill school. To what extent this should be a part of the individual fire station, or whether it should be located in a special building of its own, or incorporated in the department shops, is debatable. Each community must be studied on its own, according to size, number of firemen, stations, and last but not least the fire department budget.

COSTS: Men responsible for designing and building fire stations are often questioned on cost,—as might be expected, few fire chiefs have *carte blanche* when it comes to translating their fond dreams for departmental improvements into realities. Naturally there is no established price for fire department structures any more than there is for any other type of buildings. Some planners, who have had wide experience in this matter, have developed a sort of formula, based upon the number of apparatus doors in the fire station. They will tell you that a fire station will cost all the way from $10,000 to $50,000 "for each apparatus door" depending upon the construction, and how the building is equipped. Generally, however, the fire official planning any construction in his department, will follow the same course pursued by the person planning commercial, industrial, or residential buildings—employ capable talent, get the best advice possible, get down the rough ideas, and 'limitations"—prepare the preliminary sketches, make revisions and alterations as necessary; then the finished designs. After that, pray and do a good selling job on the "taxpayers leagues" and their like.

Church Struck by Lightning

Struck by lightning during a severe thunder storm, St. Francis Roman Catholic church, a 70-year-old brick structure at Constable, N. Y., was destroyed by fire on July 20, 1944. Partial insurance was carried on the building, loss of which was estimated between $35,000 and $40,000.

The steeple was ignited by a bolt of lightning about 1 p.m. but it was not until an hour later that smoke was seen issuing from the church. Firemen from Malone call association were notified and went to the scene with a pumper.

Flames, however, were too far advanced for the firemen to halt. Most of the church furnishings were saved and fire fighters kept a stream of water on the nearby rectory, threatened by the intense heat.

SANFORD D. DEWEY.

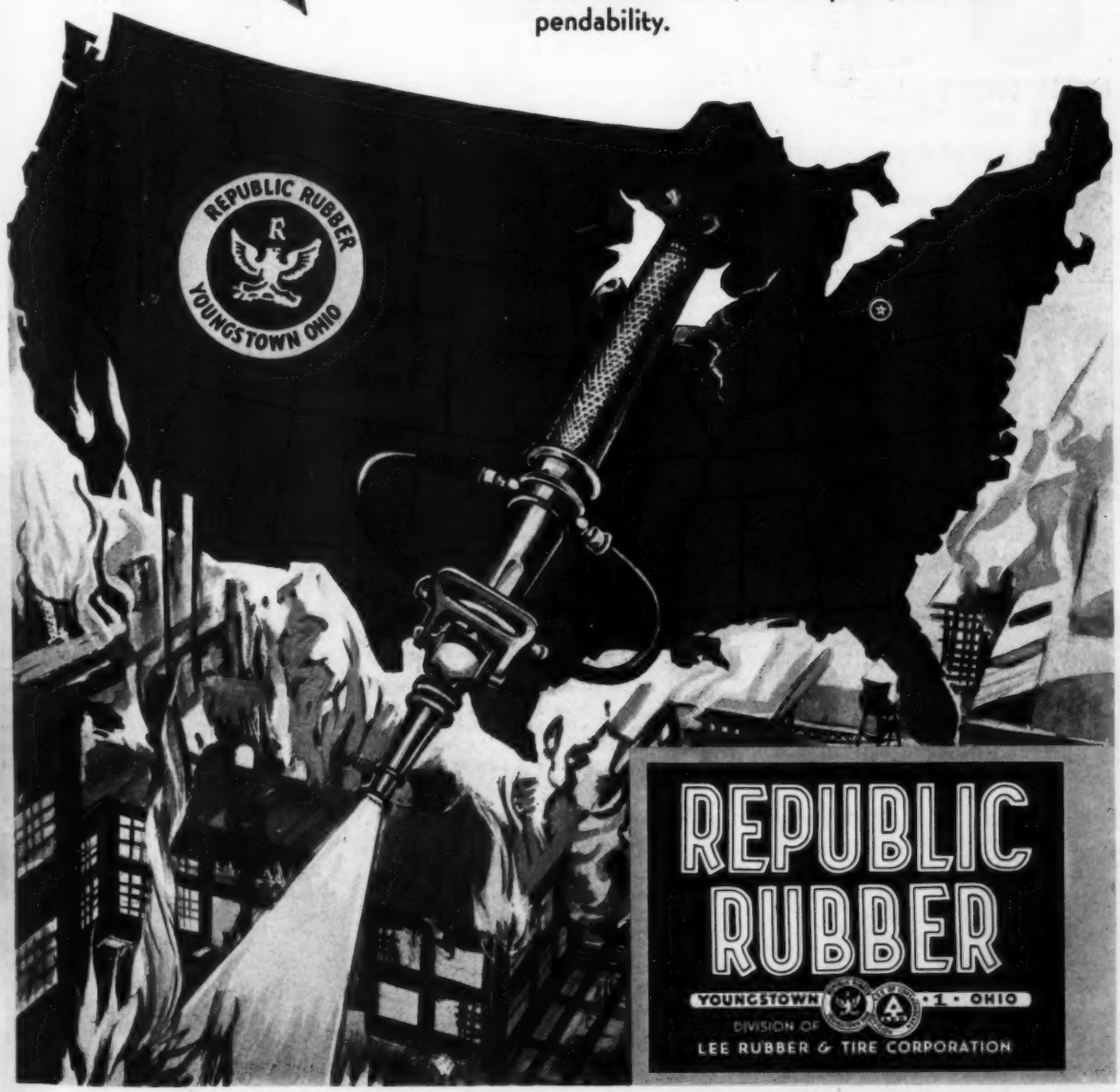
"Old Faithful" Follows Master Overcome in Fire

"Boots" a fire department dalmatian mascot, hovers by anxiously as respirator is applied to his master, Lt. Herbert Ludeman, one of ten firemen overcome by smoke in a fire at 191 Chrystie Street, New York City, on July 31.

Protecting Wartime America

PROTECTING thousands of communities against the peril of fire is an important phase of defending America in wartime. Day and night watchfulness guards millions of homes, businesses and industries.

Republic Fire Hose is one of the vital pieces of equipment that provides assistance. Years of research and experience in natural and synthetic rubbers is assurance of its quality and dependability.



We shall appreciate your mentioning FIRE ENGINEERING *when writing advertisers*

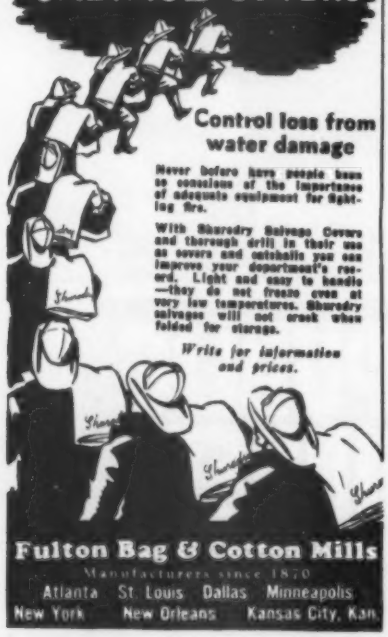
QUAKER

FIRE HOSE
CHEMICAL FORESTRY
•
SUCTION HOSE

QUAKER QUALITY SINCE 1885

QUAKER RUBBER CORPORATION
PHILADELPHIA . NEW YORK
CLEVELAND . CHICAGO . HOUSTON
Western Territory:
QUAKER PACIFIC RUBBER COMPANY
SAN FRANCISCO . LOS ANGELES

USE Shuredrup SALVAGE COVERS



Control loss from water damage

Never before have people been so conscious of the importance of adequate equipment for fighting fire.

With Shuredry Salvage Covers and thorough drill in their use as covers and catchalls you can improve your department's record. Light and easy to handle—they do not freeze even at very low temperatures. Shuredry salvage will not crack when folded for storage.

Write for information and prices.

Fulton Bag & Cotton Mills
Manufacturers since 1870
Atlanta St. Louis Dallas Minneapolis
New York New Orleans Kansas City, Kan.

Manufacturers' Announcements

(*Continued from Page 556*)

W. H. Kelley Appointed Motorola Sales Manager

Paul V. Galvin, president of Galvin Manufacturing Corporation, makers of Motorola home and car radios, announces the appointment of William H. Kelley as General Sales Manager of the corporation.

W. H. Kelley

Mr. Kelley is well and favorably known to the radio trade, having been a sales executive of RCA for a period of twenty years. He recently resigned as their regional manager of the San Francisco district, and will assume his new duties with Motorola on September 1, 1944. Prior to his RCA association he spent two years in the sales department of Garod Radio.

The sales management of the Galvin Manufacturing Corporation is now developing complete plans for post-war radio distribution, many of which will soon be announced to the trade. The company will resume the civilian production of AM and FM home radio, automatic phonographs, portable and personal radios, standard and specific automobile sets, and two-way radio-telephone systems as soon as they receive the green light from the War Production Board.

New Fire Protection Handbook

A new fire protection handbook entitled "Sharpshooting at Flames" has been published by Randolph Laboratories, 8 East Kinzie Street, Chicago, Ill. The booklet explains and illustrates the latest technique in fighting fires with carbon dioxide.

The booklet also describes the physical characteristics of carbon dioxide gas, the proper arrangement and distribution of the fire extinguishers and the organization of the plant fire fighting system.

Oren Announces New Pumper

The Oren Fire Apparatus Company, Roanoke, Va., announces the "Custom-Built Pumper." Because the needs of departments vary considerably, Oren will build the equipment to meet the individual needs of the purchasing fire department, thus giving the purchasing chief the opportunity of incorporating his own ideas in the apparatus he buys.

The following sales engineers have been appointed to distribute and service Oren equipment in their respective territories:

Mr. George R. Lindsay, P. O. Box 555, Hagerstown, Md., for the States of Maryland and Delaware.

Mr. Stanley E. Seebohm, P. O. Box 167, Lockland, Ohio, for the State of Ohio.

Mr. Frank Gillooly and sales staff of Southeast Engineering Company, P. O. Box 491, Jacksonville, Fla., for the States of Florida, Georgia and Alabama.

Catalog on Safety Equipment Issued

Atlas Safety Equipment Company, Inc., of New York, announce the publication of a new catalog covering their complete line of safety equipment including life nets, life belts, etc.

New "Saw Gun" for Firemen

The new saw-gun is described as an attachment for electric drill, flexible shaft or compressed airline, creating an efficient portable power saw or file. It will cut directly into wood or plastic without drilling for starter. The unit is portable and is said to be a valuable addition to fire fighting equipment for quick cutting into metal, wood or other material that may impede the work of firemen in their attempt to reach entrapped persons. The Saw-Gun will saw or file plastics, heavy sheet metal, castings or rod in hard to get at places that are practically inaccessible with any other tool.

Saw Gun in Operation

According to the manufacturer, the Saw-Gun can be easily attached to any electric or air drill of flexible shaft and is simple to operate. For complete details write to Mid-States Equipment Company, Saw-Gun Division, 2419 S. Michigan Avenue, Chicago 16, Ill.

Volunteers Handle Lofty Fire

Scaling a 250-foot steel ladder to the top of a surge tank used by a power corporation was a little out of the ordinary for members of the Colton volunteer fire department more accustomed to fighting farm and woods fires in the foothills of the Adirondack mountains in northern New York.

The firemen were called early on the morning of August 2 to Brown's Bridge where the Central New York Power corporation has a power station. The fire was burning in a scaffolding erected around the bowl of the tank which was being repaired.

Carrying pack pumps and chemicals, a group of firemen went up the 250-foot perpendicular ladder to get at the blaze which had been smouldering for several hours. Workmen the previous day had been welding plates on the tank and it is believed a piece of hot metal dropped on the wooden scaffolding.

SANFORD D. DEWEY.

DAYTON POWER-DRAULIC EXPANDER

with—3

OUTSTANDING FEATURES

EXPANDS

Couplings from ¼-inch chemical hose to 6-inch suction hose with positive expansion —no guess work.

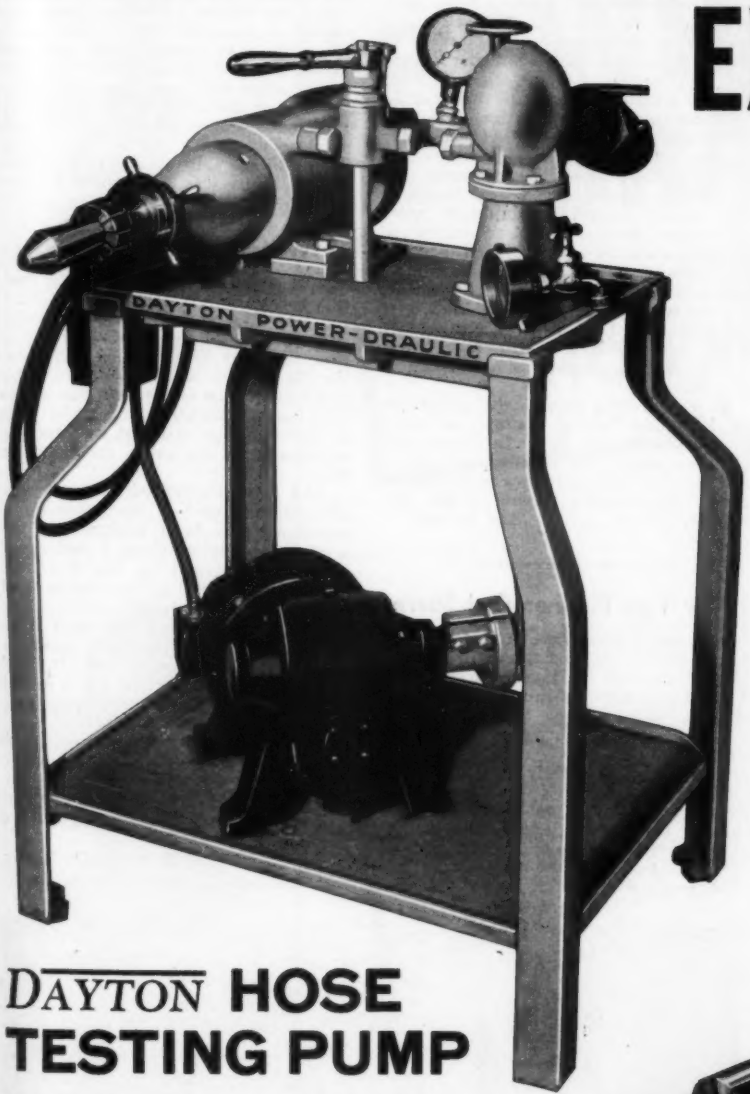
TESTS

Hose up to 700 pounds pressure automatically. No manual labor required whatever.

REMOVES

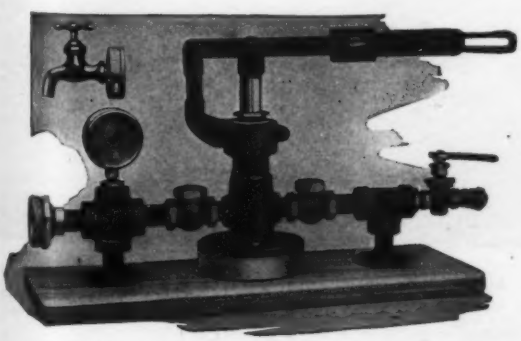
Old rings from coupling without the use of hammer and chisel. America's first successful expansion ring extractor.

(*This is an optional attachment*)



DAYTON HOSE TESTING PUMP

With this pump, any hose can be tested up to 500 lbs. by hand in just a few minutes. Completely furnished as shown. The most efficient pump for testing hose on the market.



DAYTON MASTER MODEL EXPANDER

For Smaller Cities whose requirements are limited to ¾"—1½" 2½" Hose

Expands couplings on all hose from ¾" to 3" size, furnished regularly with 1½" and 2½" segments. Only an easy change of segments is necessary for use with different sizes.

SEE MACHINE ON DISPLAY IN CIVIC AUDITORIUM

DAYTON FIRE EQUIPMENT CO.

1242-48 W. 2nd ST., DAYTON, OHIO

The element of time is of first importance in the successful treatment of burns. If a burn is treated within 15 minutes after it occurs, the probability of blister formation is reduced to a minimum. But if time is wasted before proper treatment is started, serious complications and infection may follow.

When using Gebauer's TANNIC SPRAY in the treatment of burns, the factors involving time-loss are eliminated. This preparation is a stable solution of tannic acid ready for immediate use. Packaged in a sturdy amber bottle having an automatic dispensing cap, which permits the projection of the solution in the form of a fine jet stream. Upon application the solvent evaporates rapidly, covering the burn with an evenly applied, dry and flexible film of tannic acid.

Gebauer's TANNIC SPRAY is a practical *first* first-aid treatment for first, second, and smal area third degree burns. Write for literature.

THE GEBAUER CHEMICAL CO.
9410 St. Catherine Ave. • Cleveland 4, Ohio

THE *New* WHEAT
Rechargeable Spotlight

MODEL 158

2500 FOOT BEAM
25000 CANDLE POWER
1000 HOURS OPERATION

Critical Materials Reduced to a Minimum to Insure Availability

FEATURES

★ Positive "non-spill" Construction
★ Less expensive Operation than dry cells
★ Free use of Hands. Light carries conveniently on Shoulder Strap
★ Weighs only 92 ozs. complete
★ Simple to Charge and Water No need to take Lamp apart
★ Light can be Focused and Directed as Desired

WRITE FOR COMPLETE DETAILS

KOEHLER MANUFACTURING COMPANY, INC.

Firebug Sets Costly Fire

(*Continued from Page* 540)

is reported to have passed the remark, "Don't sleep too tight tonight, there's liable to be a lot of fire around this place before morning." The man said to have made this statement was described to Arson Squad Detectives as being six feet tall and having a "peg leg." During the day a man answering to this description was picked up, questioned at Fire Headquarters, and confessed to setting the fire. He was LeRoy (Pegleg) McCammish, 30-year-old Oklahomian. According to Inspector George Smith o the Arson Squad, McCammish piled some straw against one of the barns and touched a match to the pile. Investigation showed he had served a six months prison sentence in California for setting fire to wheat fields. He is known to have been in Louisville, recently when a big fire occurred at the race track; Police are questioning him concerning this blaze.

It is said that this is the worst fire in Michigan racing history in which there was loss of life. In September, 1941 fire wiped our two other barns at the grounds but no horses were stabled there; the meeting having ended previously.

MAX O. LEE

New York Firemen Get Scare

Fire that swept what proved to be an empty 10,000 ton Liberty ship moored at 133rd Street and the Hudson River, New York City, causing injuries to twenty persons, gave firemen a scare when it was first reported the vessel was loaded with munitions.

The fire, apparently started when sparks from a welder's torch ignited oil-slicked water swept up the sides of the ship to the superstructure, causing injuries to firemen, policemen and shipworkers. Seven of the latter were rescued from the flaming water by four policemen who first threw logs into the water to the struggling men, and then leaped into the river to help rescue them.

The blaze spread so rapidly—being clearly visible from the New Jersey shore, that three alarms were sounded in rapid succession. Disaster units were rushed to the scene when it was rumored the ship was loaded with munitions. When the first truck companies arrived at the scene fifty men were clustered at the bow of the ship. Aerial ladders were raised to remove them. Considerable damage was done to the pier and the sailing of the ship was delayed 24 hours. The freighter was undergoing repairs a. the time.

Watertown Station Closes

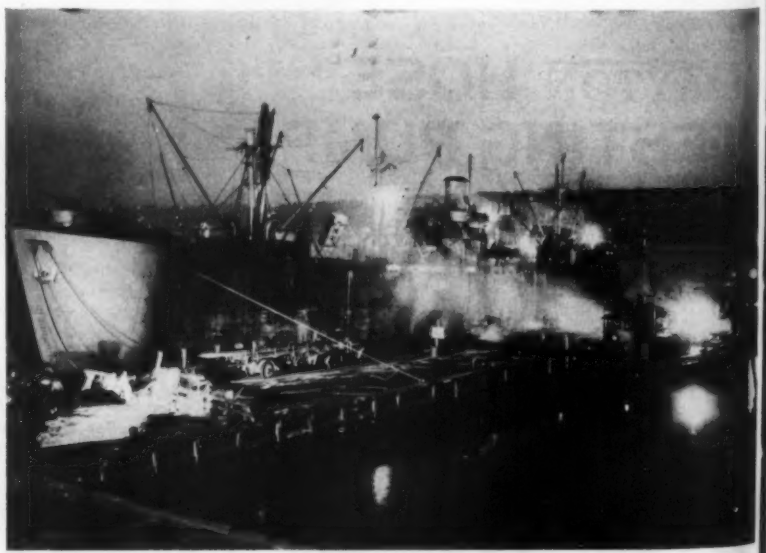
Fire apparatus rolled out of No. 4 fire station in Watertown, N. Y., for the last time in July as the manpower shortage forced the closing of the station, used by the city fire department for the past 36 years. No. 4 station, located on Lillian street, will not be operated for the duration and Chief Joseph T. Dibble has assigned the men and equipment to the other three city stations.

The station required one officer and three men on each of the two shifts. The personnel has been assigned to other companies, giving them a full complement. Equipment of No. 4 company consisted of a 700 gallon pumper and a 300 gallon pump, held in reserve.

Watertown's fire department is now nine under its authorized strength of 47 men and officers. Lt. H. D. Drake, a veteran of 36 years service, is expected to retire in August, increasing the vacancies to ten.

Possibility has been expressed that the auxiliary fire department may ask permission to take over the idle No. 4 station. Fire insurance rates in the city are not expected to be changed by the closing of the station.

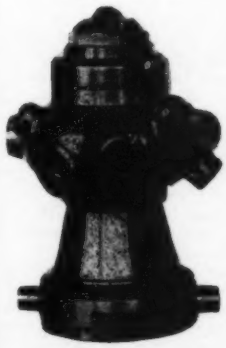
SANFORD D. DEWEY.



Liberty Ship afire at New York Pier

An empty, 10,000-ton Liberty ship was damaged in a fire on July 26 which caused injuries to at least fourteen persons. The ship was tied up for repairs at a Hudson River pier. Firemen battled two hours before the flames were brought under control.

Perfect Combination Play Pipe with Leader Line Tip. Comes in 2½ inch size. Built to stand the gaff.



Bresnan Cellar Nozzle comes in 2½ inch only. Ball bearing movement. A rugged, perfectly balanced nozzle.

Improved Dewey Hose Expander, size 2½ inch only. A practical precision built tool that will last a lifetime.

POWHATAN BRASS AND IRON WORKS

REG. U.S. PAT. OFF.

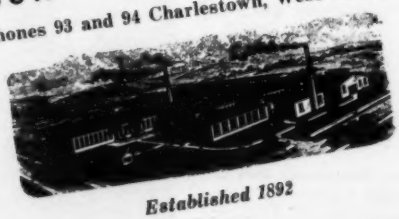
Serving the Fire Field Since 1892

AFTER all, fire department brass goods look much alike. Your one assurance of quality is the number of years the particular manufacturer has been serving the field and how well his products have stood up. You will find POWHATAN brass goods in fire departments from coast to coast. You will find our products have "stood the gaff" as only good products will.

You can get POWHATAN brass goods now only on excellent priority. We are and have been 100% on war work. After the war we will have all you want—and the kind you want.

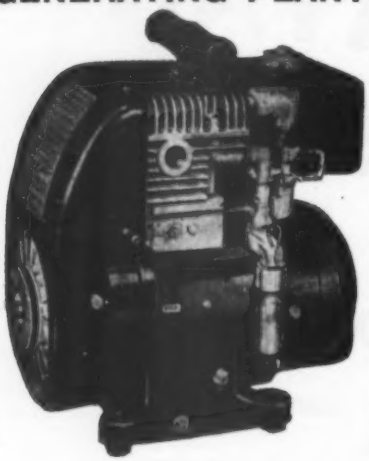
POWHATAN
BRASS & IRON WORKS
RANSON ★ WEST VIRGINIA

Phones 93 and 94 Charlestown, West Virginia



Established 1892

PORTABLE
FLOODLIGHTING
GENERATING PLANT



This 1500 watt portable generator, with 25% reserve, especially designed for fire department service. Lightweight, rugged and compact. Air-cooled 4-cycle engine 2¾" bore x 2¾" stroke. Quick starting. Fully guaranteed, thoroughly dependable.

★ *Write for catalog* ★

SECURITY FIRE EQUIPMENT CO.
1550 Princeton Ave. Trenton, N. J.

Bible of the Fire Service

THE FIRE CHIEF'S HANDBOOK

485 *Pages Profusely Illustrated*

By FRED SHEPPERD

Gives a practical, authoritative answer to almost every question that might come up in modern fire fighting practice.

A valuable reference guide for the progressive fire chief, and, for the fire fighter studying for promotion.

$4.00 *per copy postpaid*

Order Your Copy Today. Your money back if not satisfied (within 5 days).

CASE-SHEPPERD-MANN PUBLISHING CORP.
24 West 40th St., New York 18, N. Y.

Montebello Firemen Assemble Truck for Auxiliaries

What can be done by an enterprising fire department when the need arises has been shown by the little city of Montebello which lies just northeast of Los Angeles, occupying an area of seven and one-half square miles and having a population of 12,000.

When the war broke out Montebello had two combination pumpers, one of 750 g.p.m. capacity, the other a 500. Chief Charles W. Cox then managed to get hold of a 350 g.p.m. combination pumper and hose wagon which was rebuilt by members of the fire department, consisting of nine regular firemen, including the chief.

However, situated in the heart of war plants country, Chief Cox felt he needed additional equipment to afford greater protection in case of a bombing. Through the city, of which Milo V. Chapin is mayor, the fire department secured a 1930 Chevrolet chassis and an OCD 500 g.p.m. pumping unit.

Then, under direction of Chief Cox, the firemen built a body on the chassis, mounted the pump, equipped the apparatus with a 200 gallon booster tank, a reel and 200 feet of ¾-inch hose.

Hose beds were built on each side of the pumping unit which carry 600 feet of 2-½inch hose and 200 feet of 1½-inch hose. Also mounted on the truck are a 24-foot extension ladder, a 12-foot roof ladder, two 10-foot semi-hard suction lengths, two 5-gallon hand pumps, several siamese couplings, nozzles, a shovel, a 75-foot lifeline, crowbar and other tools. The truck, for which the booster tank and other parts were secured without cost from various oil companies through efforts of the chief, is equipped with red lights and a siren.

The truck is manned by ten auxiliary firemen under command of Auxiliary Fire Chief Joe Dowd. It covers about one square mile of territory and is housed in quarters specially built for it.

During an emergency twenty auxiliary firemen operate out of the main station under direction of Auxiliary Fire Chief E. J. Grady.

Another auxiliary crew of eighteen men under Auxiliary Chief Leroy Andrews is equipped with a 500-gallon trailer pump unit and is assigned to a territory about a mile square.

Auxiliary crews are well trained and the city of Montebello is ready to cope with any emergency.

BOB GREENOCK

Timber Lands Destroyed by Brush Fires

Drought conditions which were especially prevalent during July in the Tidewater area of Virginia resulted in a number of brush and woods fires which destroyed thousands of dollars worth of valuable timber lands.

The largest of the fires broke out early in the month near Fox Hill, Va., sweeping over an area more than two miles square and threatening more than a dozen homes as volunteer firemen from Phoebus and Fox Hill battled it for several days.

The fire broke out on July 6 near Bloxom's corner and burned in the direction of Buckroe Beach. Firemen dug a mile long fire line and got control of the fire but later it jumped the lane and started blazing fiercely in timber.

Phoebus firemen laid 1,200 feet of two and a half inch hose July 7 in an effort to wet down the path of the fire. With the fire still burning briskly at nightfall, Phoebus rolled out another 800 feet of hose and used an OCD trailer pump to boost the pressure on the long line. Fox Hill firemen strung another 1,000 feet of hose in an all-night long battle.

A contingent of more than 100 soldiers from nearby Fort Monroe was called the following day to assist in digging a new fire line which finally checked the spread of the flames.

During the period of the fire a haze of smoke hung over the lower Peninsula and for several hours one afternon extended out into the Chesapeake Bay, requiring the use of fog horns.

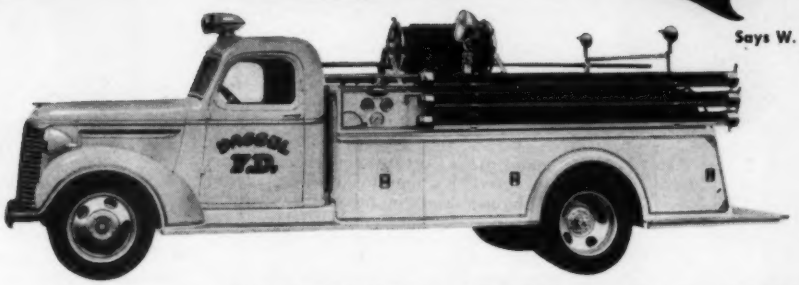
In addition to this fire, Phoebus and Fox Hill volunteers spent nearly nine hours at another woods blaze on Woodland road July 6. At one time Phoebus had three trucks out on different calls, leaving one in the station for reserve.

SANFORD D. DEWEY.

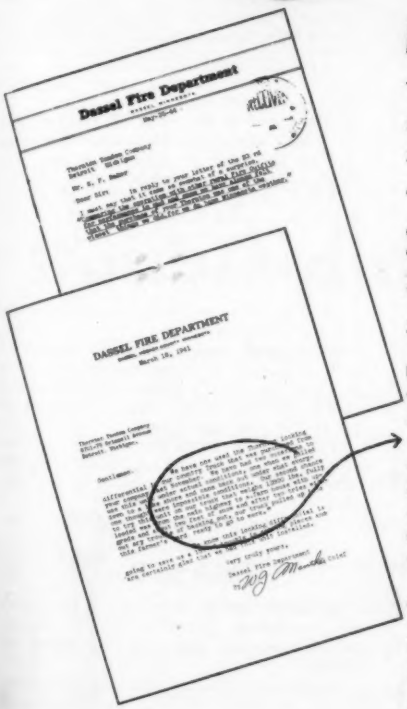
Montebello Firemen on the Auxiliary Fire Truck They Assembled

Firemen at Montebello, Calif., under the direction of Chief Charles W. Cox, installed a 500-gallon OCD pump on this 1930 Chevrolet truck. Chief Cox is at the right. Driving and riding on the truck are Acting Captain A. L. Watson, Firemen L. E. Holmes, E. F. Stacks and R. Peterson.

"PURCHASE OF THE THORNTON DIFFERENTIAL WAS ONE OF WISEST THINGS WE DID"



Says W. J. Manthei, Chief
Dassel Fire Dept.
May 26, 1944


Dassel Fire Department

DASSEL FIRE DEPARTMENT

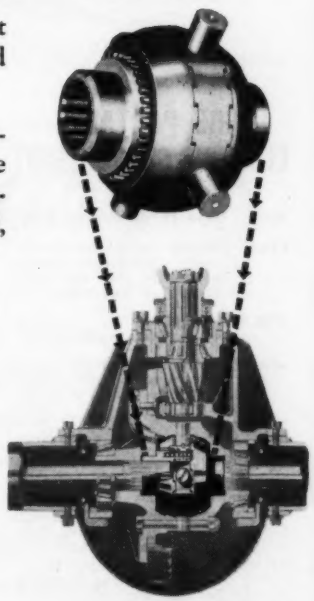
MAKES WHEELS PULL

Your fire equipment must deliver fast action . . . must reach the scene and return safely and surely.

Trucks, in which the standard differential has been replaced by the Thornton *Automatic-Locking* Differential, move through snow, mud, sand, gravel or over ice.

In 1941, Mr. Manthei related: "We pulled down to a lake shore and came back out under what everyone thought were impossible conditions. Our second chance to try this unit on our truck that weighs 12,800 lbs. fully loaded was from the main highway to a farm house with upgrade and about two feet of snow and after two tries without any trouble of backing out, our truck pulled up into this farmer's yard ready to go to work."

This differential provides positive traction. Stops and prevents stalling as a result of any one wheel spinning. Let us prove the facts to you. **Send coupon today.**



THORNTON
Automatic-Locking
DIFFERENTIALS

THORNTON TANDEM CO.

8753-D GRINNELL AVENUE • Plaza 9700
DETROIT 13, MICHIGAN, U.S.A.

Investigate THORNTON *Automatic-Locking* DIFFERENTIAL for Replacement in Truck Axles

In Canada see: H. V. WELLES, LTD., Windsor

Thornton Tandem Co.
8753-D Grinnell Avenue
Detroit 13, Michigan, U.S.A.

Please send me full details on selling your Thornton *Automatic-Locking* Differentials

Name_____

Company_____

Make Truck we represent_____

Street_____

City_____ **Zone**_____ **State**_____

Turns Darkness into Daylight

•

THIS PORTABLE ELECTRIC SEARCHLIGHT

Has

Many Uses in a Municipality:

FIRE CHIEFS use it for entering dark buildings, rooms or basements, also for lighting fronts of buildings.

POLICE CHIEFS find it useful in dark parkways and alleys.

WATER DEPARTMENTS use it on emergency night jobs—such as repairing a large broken main.

BIG BEAM provides a brilliant beam giving daylight visibility for any night job or emergency—projecting the beam for a distance in excess of 2500 feet.

Or—an interchangeable lens will diffuse the same volume of light over a wider area.

By use of the Big Beam "Hold-Down," the lamp can be fastened to any flat surface.

The lamp head can be turned in any direction, and it stays adjusted.

The Big Beam is portable, powerful, dependable, sturdy, shockproof.

Sold through wholesalers.

Send for this free folder.

U-C-LITE MFG. CO.
Department FE
11 East Hubbard St., Chicago 11, Ill.

Gentlemen: Please send me without cost your circular matter explaining the features of the Big Beam.

Name .....

Address .....

City ..... State.....

New Assignment Cards for San Francisco Firemen

New assignment cards for alarm response in the high value and high hazard sections of San Francisco were put in service recently it was announced by Chief Albert Sullivan.

Battalion Chief Rudolph Schubert, in charge of making the assignments and getting out the new cards, said those covering the remainder of the city would be ready sometime in the Fall.

Those now in service begin with the 900 (waterfront) boxes and run through the 4000 series. All San Francisco boxes with the exception of waterfront boxes are four digit boxes.

The new assignments include two trucks on nearly every box. The second truck and third engine on the first alarm assignments do not respond, however, during the hours of 8 a.m. to 6 p.m. However, should a multiple alarm be sounded, the two companies run as part of the second alarm assignment, giving five engines and, in some cases, three trucks on the second alarm during daylight hours. From 6 p.m. until 8 a.m. the full assignment rolls.

The new cards also provide for more battery wagons without the necessity of special-calling them; provide for additional battalion chiefs on multiple alarms.

In outlying sections where no division chief responds on first alarms, a second battalion chief will respond on the first alarm in some instances.

The cards also provide for adjustment of sequence of response, moving first alarm companies to the second alarm response and vice versa.

Two new houses are scheduled to be built in the new fiscal year, one in the newly built-up Sunset-Parkside section, where a truck and engine are eventually scheduled to go, and one in the vicinity of the huge new Metropolitan Insurance Company Housing project. The latter house will quarter an engine company.

BOB GREENOCK

Wire Brushing Wheels Plug Gas Line in Fire Emergency

A radical departure from the conventional uses of wire brushing wheels involves their application as heat dampeners for gas line shut-off plugs in case of fire.

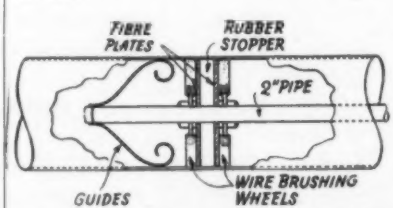


Fig. 2. Cut Away View Showing General Design and Use of Shut-Off Plug for Fire Emergency Use in Gas Lines of Cast Iron Construction

The novel use for power brushing wheels was conceived and put into practice by the Southern Counties Gas Company of Los Angeles, Cal.

A break in a gas line during a fire would endanger the entire system unless emergency shut-off plugs are quickly inserted in the line. Unlike steel pipelines, which can be shut off by hydraulic jacks in emergencies, cast iron pipe will not withstand the excessive pressure without fracturing and releasing gas which may become ignited.

Fig. 1. This Type of Disc-Center Section Wire Brush, Ordinarily Used in Industrial Production and Maintenance Work, Serves as a Heat Absorber for a Gas Line Shut-Off Plug

Disc-center section wire brushing wheels of the type shown Fig. 1, are incorporated in the shut-off plug design, the brush size depending upon the diameter of the pipe in which the device is used. The plug consists of a rubber stopper, flanged by fibre plates with a disc-center wire brushing wheel on each side, (see Fig. 2).

The plug is screwed on a 20-foot length of 2-inch pipe which serves as a handle for inserting the plug into a broken pipeline without endangering the service operator.

Two plugs each of 4, 6, 8, 10 and 12-inch sizes are kept on hand in each of the gas company's service trucks which report to specified areas in event of breaks in the gas line.

The wire brushes are said to be very effective in absorbing the heat from the flames, thus adding greatly to the efficiency of the rubber stopper.

Orchids to Donald

In every great tragedy—if tragedies can be called "great"—there is always one heroic act that far outshines all others.

From the circus fire at Hartford, Conn., on July 6 come many tales of individual heroism and quick judgment. Here is one of the kind that everybody likes to read. It's the story of a boy and a knife.

Donald Anderson, a 13-year-old crippled lad, who lives in the small village of Columbia, Conn., had long been looking forward to two promised treats. One was a visit to "The Greatest Show on Earth" with his uncle. The other was the present of a jack-knife which he had long coveted,—a knife with heavy, practical blades and a rosewood handle.

First Donald received his knife, then came the trip to the circus. When the fire broke out Donald and his uncle struggled along an exit with the rest of the mob.

"If we get separated, 'Donny,' look

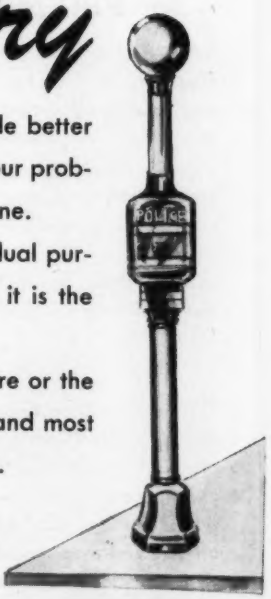
for commercial and residential locations...

This Improved **Double-duty** *Sentry*

Mr. Fire Chief . . . Mr. Police Chief—here's how you may provide better fire and police protection in your community. Here's the solution to your problem of delayed alarms or being given misinformation on the telephone.

This Double-duty SENTRY, free of human error, is an excellent dual purpose alarm apparatus by all standards. On duty 24 hours a day, it is the dependable servant of both citizen and municipal departments.

When split seconds mean the successful control of a ravaging fire or the quick apprehension of a criminal, this efficient alarm is the fastest and most accurate method by which your department can be called into action.



In the postwar plans of your community, give *first* preference to the installation of *adequate* fire and police alarm systems. The experience of our engineering department is at your service.

SOUTHERN SWITCH & SIGNAL COMPANY

"There Is No Substitute for Experience"
Shreveport, Louisiana

THIS COMPANY, *a pioneer in the designing and manufacturing of fire, police, and industrial alarm signaling systems, is today supplying the armed forces with precision instruments. It can,* however, fulfill your needs as much as war production will permit. . . . Tell us your needs.

When Promotions Come—Will You be in Line?

Advancement doesn't come to those who merely wait for it. In the Fire Service it comes to those who work for it.

PROMOTIONAL STUDY COURSE for FIREMEN

Covering in chapter lessons most of the important phases of fire protection promotional study — mainly in questions and answers form, true or false statements, and completion statements — all of it is in the concise style generally used and preferred by civil service examiners.

This book will be found most helpful to fire chiefs and other officials responsible for preparing examinations—a mighty good reason, too, why fire officers and men should find it of tremendous value in studying for advancement.

PRICE $3.00 POSTPAID

Book Dept.

CASE-SHEPPERD-MANN PUB. CORP.

24 W. 40th Street, New York 18, N. Y.

out under the bottom of the canvas.

Nobody would have blamed a frightened boy of Donald's age if he had kept on running and had gotten as far away as possible from that tent of horror.

But Donald Anderson had initiative. He remembered the cherished new knife in his pocket. Opening the biggest blade he plunged it into the circus tent and cut a long vertical slit. People began to pour through this slit. Running along the tent he cut other slits in the same manner. It is estimated that nearly 300 persons found their way to safety through this crippled lad's courage and presence of mind.

They used to give Carnegie medals for the saving of one life.

Donald Anderson of Columbia should be given a ton of them!

THOMAS F. MAGNER.

Dominion Chiefs Meet

(*Continued from page* 555)

Lieutenant-Governor of the Province of Quebec, the Honorable A. H. Fiset. They were received by the Lieutenant-Governor and Madame Fiset, following which they enjoyed several hours on the beautiful grounds overlooking the St. Lawrence River.

In the closing sessions the By-Laws were amended to provide for an additional member on the Board of Directors to represent Industrial Fire Chiefs and the Credentials Committee recommended for membership twenty-seven active, eight associate and two honorary members. The selection of the place for the 1943 meeting was left to the Board of Directors.

Officers Elected

The following officers were elected: President, Chief William Andrews, Sudbury, Ont.; First Vice President, Chief W. J. Walsh, Campbellton, N. B.; Second Vice President, Chief Angus Michie, Lachine, Que.; Secretary-Treasurer, Ex-Chief James Armstrong, Kingston, Ont.; and Assistant Secretary, Chief A. S. Clark, Lakefield, Ont. Chief Armstrong, by the way, was re-elected for the thirtieth time.

The Board of Directors consists of the above officers and the following: Chief Secord Robinson, Kapausing, Ont.; Chief Harold Walton, New Toronto, Ont.; Chief W. L. Slack, Frost & Wood Company, Smith Falls, Ont., (Industrial Chiefs); Gordon Hall, Bi-Lateral Hose Company, Kitchener, Ont., and Chief James J. O'Kelly, Eastern Flying School, St. Eugene, Ont., Past President.

Port Chicago Explosion

(*Continued from page* 543)

ment. The Salvation Army aided in feeding the homeless as did the Red Cross and other agencies. Even 80,000 feet of lumber was sent into the area by the Red Cross to be used for emergency repairs.

While a twenty-man bureau opened in Martinez, county seat, by the Fire Companies Adjustment Bureau, Inc., representing San Francisco insurance companies, was making an investigation into all phases of civilian insurance recovery, the War Damage Corporation in Washington prepared to study its liability, and civilian protection and war problems committees of the state war council met in Sacramento at Governor Warren's call to determine what aid could be given blasted communities.

Communications Kept Open

The damaged towns were guarded by police and deputy sheriffs augmented by two companies of military police and communications were kept open through use of the two-way radio operated by Sheriff James N. Long of Contra Costa County and his men.

Radio stations in the area cooperated by broadcasting pleas for assistance. Despite the death and destruction wrought by the blast, chaos was averted through hard work and hundreds of individual cases of heroism among both military and civilian personnel. The Navy was able to declare the situation well in hand less than four hours after the explosion.

California Highway Police established road blocks about the entire area and cleared the way for the hundreds of ambulances, emergency cars, trucks and station wagons.

Newsmen were permitted to visit the wrecked depot where about 1400 men and officers were stationed. Huge wooden barracks were torn asunder, the recreation hall was smashed and other installations badly damaged.

One member of the crew of volunteers who returned from the scene of carnage where he helped gather up the dead shrugged his shoulders and remarked, "There wasn't much for us to do."

At the present time fewer than twenty-five bodies, most of them unidentifiable, have been recovered.

Fireman Killed in Accident

John Walker, tillerman on Truck 11 of the San Francisco Fire Department, was instantly killed July 25 when the truck company was struck by a Municipal Railway streetcar just a block from the company's quarters at 315 Duncan Street.

According to firemen and witnesses, the truck left its quarters to respond to Box 6163, Munich and Brazil Streets, two miles distant. Siren shrieking and bell ringing, it approached Church Street. As it turned into Church from Duncan, the heavy steel tram hurtled into the intersection. The truck company driver managed to swing clear of the oncoming car but the tillerman was unable to clear it with the long rig which hit a hydrant, snapping it off and then careened across the street into a building housing Selective Service Board No. 82.

The swinging rig caught the front end of the car and snapped off the 65-foot ladder as well as several others. Walker was hurled from his seat and Mission Emergency Hospital attendants said he died immediately.

Two other firemen, Arthur Stenberg, 46, and Raymond Conroy, 29, were injured, the later seriously. The motorman, Charles Hirsbruner, was held for investigation on charges of ignoring the siren, failing to give fire apparatus the right of way and police said he would be booked on suspicion of manslaughter.

BOB GREENOCK

War Fare

By Roi B. Woolley

Tomorrow's Air Traffic

Some idea of what's in store for the Fire Service may be gleaned from data released last month by William A. M. Burden, Assistant Secretary of Commerce. He has disclosed that the Civil Aeronautics Administration will ask Congress to authorize a $1,000,000,000 program for construction after the war of a network of 3,000 private and commercial airports.

The program, which would require at least five years to complete, would bring air-transport service to 1,827 cities, instead of the present 286. According to Mr. Burden, the country will need double its present 3,086 airports within five to ten years after the war, plus improvement of 1,625 existing fields. He said that of the 3,000 post-war airports envisaged by the C.A.A. 2,900 would be "airparks" for private plane flying and the balance larger terminals for airline operations "which will become transportation centers in the same way that the railroad station has become the transportation center in the past." He noted that of the 286 places in the United States which are approved stops on scheduled airlines, 174 need improved airports for safe and efficient service. He sees flying fields located within easy reach of homes and offices; fields designed for the small private aircraft which, he says, many of us will own or rent.

The need of expansion of airport facilities is evident, Mr. Burden declared, in the fact that there are already filed with the Civil Aeronautics Board in Washington applications to begin airline service to some 720 new points. Of these, 612 are listed in the C.A.A. plan as requiring airport construction. He believes that $1,000,000,000 for the airport program is "small in comparison with the $25,000,000,000 which this country has spent on roads in the last 25 years" and he calls on every community in the nation to "begin today to examine the part it must play in a national airport program."

Only thing we find lacking in his address is reference to how, and through what agency, these airports will be protected against fire. At any rate, forethoughtful Chiefs will take these developments to heart and perhaps speed up their plans to further equip their Departments with the specialized apparatus and appliances to better meet emergencies that are already arising from our continually growing air traffic.

* * *

100,000 Spectators at Tragedy

In Spokane (Wash.) a crowd of 100,000 people—too stunned to cry out—watched two Army bombers collide during a war show and fall in flames, killing four men.

The ships were participating in the Spokane Air Service Command "stay-on-the-job" war show and were part of a formation flying almost directly above the crowd. Fortunately no civilians were injured. After a short delay the show went on. As the accident happened, loud speakers cautioned the crowd to be calm, and there was no panic.

YES! YOU CAN STILL BUY MIDWESTERN PROTECTIVE CLOTHING!

COMBINATION SUIT

The Coat...

Midwestern's No. 101 Fireman's coat is highly serviceable and popular in the larger municipal departments throughout the country. Flexible elastic inner sleeve for wrist to keep out water, cold and sparks; adjustable collar strap, detachable wool lining, Midwestern Safety snaps, two outside pockets, 6-inch storm flap and many other fine Midwestern qualities.

The Pants . . .

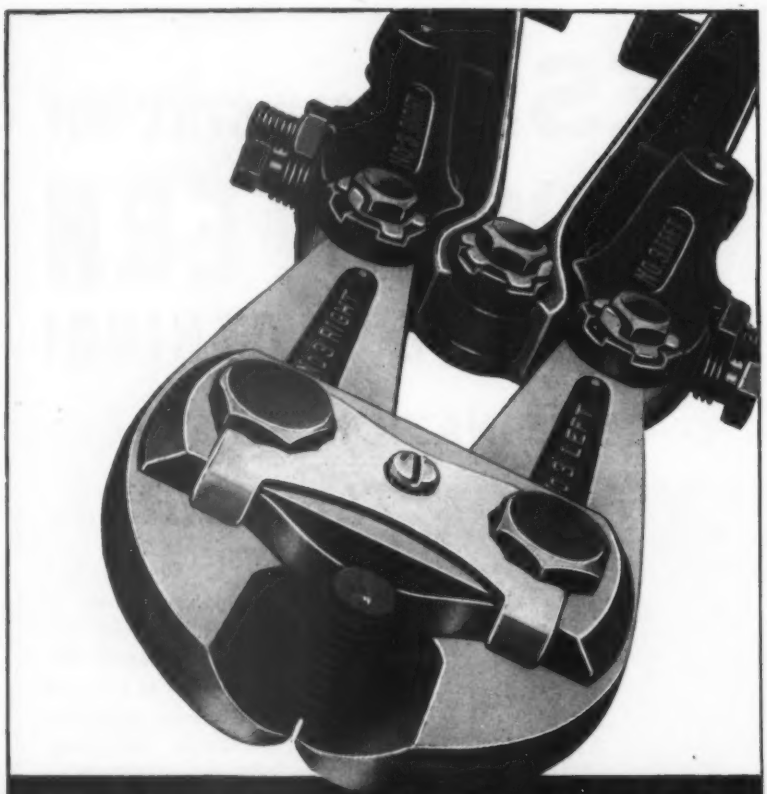
These Midwestern Bunker Pants are equipped with a removable wool lining which has safety snaps that cannot catch on anything. Sturdy construction, reinforced crotch for pole sliding. These pants together with coat illustrated above are Midwestern's outfit No. 101.

REGULAR FIREMAN'S BOOTS NOW AVAILABLE

Fireman's boots ¾ length, reinforced instep, felt linings. Do not confuse these boots with reclaimed boots which have been offered firemen for past 2 years. These are regular fireman's boots made of the new synthetic rubber. Write.

MIDWESTERN MFG. CO.
MACKINAW, ILL.

See your local Midwestern distributor for prices and literature, or write the factory.



PORTER TWO-HAND CUTTERS

NO OTHER POWER REQUIRED

Porter cutters save time and labor whether used on repairs, construction, production, or in emergencies.

Rod, bolt, flat bar, cable, wire, and chain cutting; flush, overhead, on floor, etc., are only a few of the operations easily and quickly performed by hand with Porter standard cutters. Porter special tools for heading, pressing, crimping, punching, and caulking are equally efficient.

Write for Porter Catalog, illustrating and describing the Porter line — also a free copy of Tool Maintenance Book — a practical manual on the use and care of clippers, saws, chisels, files, and other hand tools. A request on post card or letterhead will bring it without charge.

H. K. PORTER, INC., 410 Ashland St., Everett 49, Mass.

PORTER HKP CUTTERS

Death from the Skies in Jacksonville

Another serious airplane tragedy occurred in Jacksonville (Fla.) where two Army pilots and a civilian were killed and at least a dozen persons injured when two Army pursuit planes crashed into a residential section of the city. Three apartment houses, twelve private homes and three garage apartments along a two-block stretch were damaged, some badly. Several of the places caught fire and two homes were almost destroyed. Poles and trees were knocked down, roofs caved in and debris strewn over a wide area. At least ten automobiles were wrecked. The engine of one plane hurtled through a brick wall of an apartment house, crashed through a bathroom and came to rest on a second-floor corridor. Witnesses said the planes appeared to be hedge-hopping.

* * *

Other Plane Tragedies

About the time the above events were taking place, a Liberator bomber from Walla Walla (Wash.) Army Airfield exploded in the air and crashed near Touchet (Wash.) killing all 12 crewmen. Bodies and wreckage were strewn over a radius of more than three miles, according to witnesses.

A day later, eight airmen were killed, ten slightly injured and two reported missing following the collision of two Flying Fortresses during combat training north of Brooksville (Fla.).

The same day two Army fliers and an aviation cadet were killed in another collision about ten miles south of Albany (Ga.). Two other aviation cadets parachuted safely from the planes.

Also about that time, two Army Majors were killed when their plane crashed south of the Smoky Hill Army Air Field (Kans.).

In a crash of a heavy four-engined plane, near Cottonwood Falls (Kans.), five Army airmen were killed and a sixth injured. This plane smashed into a house and burned.

Only a few days before the foregoing the crews of two heavy four-engined bombers and pilot of a P-47 Thunderbolt escaped serious injury in a freak three-way collision which damaged both large planes and sent the fighter crashing near North Wilbraham (Mass.).

* * *

Worst July Airplane Disaster

Twelve persons, including several children, were killed, 21 others injured when a twin-engined Army bomber crashed and exploded in the West-Brook trailer camp (adjacent to the Federal Red Bank Housing Development.), South Portland (Me.).

The wrecked plane set fire to 12 trailers which were destroyed in a few minutes, while 12 others were damaged. The pilot, in trouble, evidently tried to land against an embankment in front of the trailer camp, which is about a mile from the airport. Wife of the pilot was waiting for him at the airport. As the plane plowed through trailers it sprayed gasoline on every side, which, when ignited, made rescue of victims by other residents of the camp impossible. South Portland and Portland firemen brought the fire under control, aided by rain. Police, firemen, Red Cross workers and an Army detail searched wreckage for victims during electrical storm. An investigation is under way.

Bombed Cow Burns Four Days!

When a British bomber blasted a war plant in the Danish town of Skive, the Nazi Propaganda Ministry reported that no damage had been done except that a cow had been hit, according to the "Bulletin From Britain" published by the British Library of Information. The "Bulletin" adds, however, that the local paper, the "Skive Folkeblad" dutifully carried the communique, and then commented simply: *"The cow burned four days"!*

* * *

Well Trained Wardens!

An anonymous contrib' sends us one from Whitakers (N. C.) about the air-raid siren of the place which roused the whole village at 2 a. m. Firemen rushed to their posts and air raid wardens turned out complete with helmets, whistles and armbands. From afar came the steady drone of a motor. Nobody could figger why Whitakers should be bombed, for it's by no means an approach to a military target.

Then, with a roar, a stream-lined train rushed through town. Whitakers, including the disgusted vamps, went back to bed.

* * *

Gimlet-Eyed Schubert Gets His Man!

Fireman Charles Schubert, Eng. Co. 208, Brooklyn (N. Y.) spotted a man who turned out to be a Walter Agotz, German, scanning the East River waterfront with field glasses. Schubert went over to investigate and Agotz retreated, with Schubert following. When the latter finally detained Agotz, it developed that he is registered as an enemy alien, having been in the U.S.A. since 1939. He said he had taken an afternoon off from his job and was just looking around. FBI and police put him over the hurdles, but after being questioned he was released. Orchids to Brother Schubert says we, even if his prisoner didn't prove to be the real Hitler.

* * *

Gas-Filled Cylinders Explode

Lancaster (Pa.) got a shock when 47 gas-filled steel cylinders were hurled through the air like robot bombs, spouting flames from their tails and exploding, after a truck caught fire in an accident growing out of a collision in which the driver of one vehicle was burned, and in which the other suffered a skull injury.

It is reported that the containers shot as high as 50 feet and some landed 400 feet from the scene. Fortunately there were no homes nearby. The cylinders were being transported to Harrisburg (Pa.) from a plant in Bridgeport (Pa.). Firemen from Mount Joy, Elizabethtown and Rheems extinguished the flames.

* * *

Comfort to Hitler-Hirohito

PHILADELPHIA, Pa.: Fire and four explosions that sprayed blazing tar wrecked part of roof processing plant of Barrett Div. of Allied Chemical & Dye Corp. Two firemen injured.

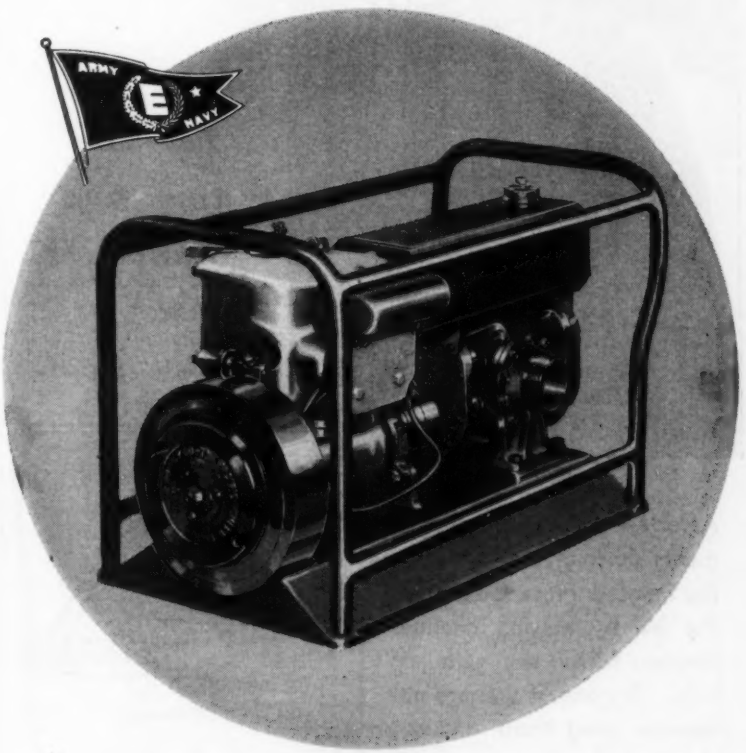
PHILADELPHIA, Pa.: Hundreds of Navy Yard workers had to suspend work and several were treated for minor injuries when fire, believed started from a cutting torch, ignited hose and electric cables and burned interior of a ship under construction. Total damage a military secret.

DAYTON, O.: A fireman, Joseph P. Knaggs, 51 died fighting a blaze that

Pacific

HANDY BILLY

Portable Pumper



The principles of design and precision manufacture that have made the Pacific Handy Billy such an effective fire fighter for the Navy will, in due course, be available to protect forestry, industry and shipping against the ravages of fire.

Fire Fighting Equipment Division

PACIFIC MARINE SUPPLY COMPANY

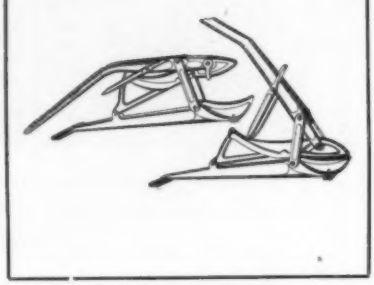
SEATTLE, WASHINGTON

PEERLESS HOSE CLAMP

TYPE E

An Absolute Necessity in Changing Hose Layouts!

Try this time and Manpower saver in your Dept.



After all—with many departments short of man power—the Peerless Hose Clamp fills the bill by making changes simpler, faster and with less help. Try one, if you are not already using them, and see the time they save.

Saves time—speeds up laying new lines.

All you do is apply clamp on live line, and pressure is immediately shut off and held by automatic lock, making it a simple job to climb ladders, stairs, etc., with hose.

No need to trace lines or send a man back to hydrant or pumper.

Absolutely safe and reliable. Used in hundreds of departments over the past 30 years.

Specify a Peerless on All New Apparatus

Patented U. S. and Canada—Made by

KELLAM MANUFACTURING COMPANY

BOX 729, ZONE 1, ATLANTA, GA.

destroyed a building at Patterson Field. Details not divulged.

PITTSBURG, Calif.: Fire destroyed the big Redwood Manufacturers mill with loss estimated at $2,500,000.

JEFFERSONVILLE, Ind.: The Georgia Pfau Sons Oil Co. plant was destroyed in spectacular blaze that required efforts of Louisville, Clarksville, U. S. Quartermaster Depot and U. S. Coast Guard fire fighters to confine it.

BRONX, N. Y.: Fire of undetermined orgin destroyed plumbing shop of Robert Jacobs, Inc. shipyard, City Island. Plant is building minesweepers.

MOUNTAIN LAKES, N. J.: One worker was killed, eight injured, in fire in mixing building of Standard Railway Fuse Corp. Four buildings burned. Damage not given.

CHICAGO, Ill.: Administration Building at the thirty-three million dollar Douglas Aircraft Plant in suburban Park Ridge was destroyed in fire which at times threatened main plant. Hundreds of firemen from suburban districts and Chicago brought blaze under control. Three Chicago firemen injured. Damage estimated at $1,500,000. Flames visible for miles, resulted in jamming of roads, hindering response of firemen.

ALBUQUERQUE, N. Mex.: The Railways Ice Co. plant near here burned with loss of half a million. Worse, it caused delay of all green vegetable and fruit shipments from West Coast for 24 to 48 hours. Plant furnished ice for railroad cars!

* * *

Hot Off the War Ticker

Death toll in the Chicago Harbor blast, described elsewhere in this issue, is now reported at 325. The only survivors of the two ships that exploded were 24 men who were on shore at the time. A Naval inquiry has not yet released its findings. . . . It is reported that a German munitions ship blew up in Aarhus harbor (Denmark), causing damage estimated at estimated at $25,000,000. At least 80 persons were killed and 300 injured, the reports said. 1000 buildings were damaged by the explosion which set fire to several other vessels in the harbor. . . . In Canada inquiries are being made into the circumstances under which a three-inch mortar bomb burst during target practice at Mount Bruno ranges, killing 11 men and wounding 34. . . . *Ann Jiminez,* 15 *and Jean Hawkins,* 14 *received commendations at the Fourth Air Force Santa Rosa (Cal.) field for heroism in saving the life of a pilot, 2nd. Lieut. Peter R. Laforce of Dansville (N. Y.), when he crashed on June 29. The girls braved flames from burning plane to pull the flyer to safety.* Orchids! . . . Entire ten-man crew of a B-17 Bomber which crashed in mountains near Rangeley Lakes (Me.) were killed. Plane exploded as it hit ground. . . . A United States airman was killed and another officer is missing following crash of a mercy flight plane in Hudson Bay, 1000 miles north of Winnipeg. Plane was carrying medical supplies to epidemic-stricken Eskimos and Indians. . . . When Lieut. John N. Carson's training plane hit high tension wires, near Islip (L. I.) it zoomed upward enabling him to parachute safely to earth. Then it crashed and burst into flames near a railroad station. . . . The U. S. Army has an oil bomb weighing 6½ pounds that splatters burning gasoline jelly as far as 100 yards. Nice fer the Nips eh?

What's Burning

THE following list includes fires of $50,000 loss and over in the United States and Canada, for the month of July, 1944. These figures, compiled from the telegraphic reports, are based on estimates made at the time and are subject to later investigation and consequent revision. Taken as a whole, however, they are an approximately correct view of the losses incurred. The figures represent losses in thousands of dollars.

Months Ending July 31	Losses in Thousands of Dollars
Jeffersonville, Ky.—George Pfau Sons rendering plant damaged	60
Saginaw, Mich.—Cal-Wood Specialty Co. warehouse and retail store bldg. destroyed, including A. & P. Supermarket, Lee & Cady Co., and adj. Strobel Bros. store.	150
Baltimore, Md.—Oriole Park, home of Baltimore Int. League Club. All uniforms and equipment of Baltimore club and of the Syracuse Chiefs destroyed. Hardware store and cafe on a corner next to stands were gutted	125
Longview, Wash.—Pacific paperboard plant damaged	170
Moline, Ill.—Four-story Baker Furniture Co. bldg. damaged	50
Batesville, Ind.—Benz Co., Hertel Shoe Co., Frank Gehring Baker and Home Outfitters, damaged	50
Rocky Mount, N. C.—Roll canvas, owned by Federal Government, stored at Carolina Awning & Tent Mfg. Co. plant damaged	75
Delaware, Ohio—Grain elevator of Delaware Farmers' Exchange Assn. destroyed	50
Hudson, Mich.—Alfalfa mill, owned by Glenn L. Miller destroyed	60
Las Vegas, Nev.—Dunes Club and Colony Club, eastern outskirts of city destroyed	225
Cincinnati, Ohio—Warehouse occupied by Thieman Bros., Inc., wholesale grocers, and Grossett Co., commission merchants, damaged	200
Dayton, Ohio—Bldg. at Patterson Field, occupied by signal branch of Army's Air Service Command, destroyed	225
Chicago, Ill.—Leising Lumber Co. yard, suburban Chicago Heights, destroyed	80
Chicago, Ill.—Plant and yards of Boynton & Co., destroyed	125
Greenville, Mich.—Ford Garage damaged	80
Winner, S. D.—Outlaw Trading Post destroyed	80
Magog, Que.—Battle House Hotel destroyed	80
Wenatchee, Wash.—Distribution plant of Richfield Oil Co. damaged	50
Seattle, Wash.—Army Service Supply Department damaged	50
Nashua, N. H.—Haggerty bldg. and adj. stores damaged	50
Silver City, N. M.—Dusty Rhodes Tire Service Shop damaged	50
Burlington, N. J.—Clover Shoe Co. damaged	80
Iberville, Que.—Furniture store of J. S. Gibault and Buanderie-Meunier cleaning business damaged	80
Alameda, Cal.—Lucky Market damaged	125
Prescott, Ark.—General Box Co. planing mill, dry kilns and two box cars, Prescott & Northwestern Railroad tracks, destroyed	50
Okoboji, Ia.—Nine sheds and seven or more boats at Okoboji Boat Works destroyed	50
Columbus, Ohio—Ohio Horticultural Service and Jackson Furniture Co. damaged	80
Owensound, Ont. — Foundry and casting storage dept. of Empire Stove & Furnace Co. destroyed	80
Little Rock, Ark.—S & J box factory, an adj. garage, three warehouses and dwelling damaged	50
Lunenburg, Mass.—Whalom Park amusement center damaged; also two cottages	50
St. Louis, Mo.—Office and yard of Ganahl Lumber Co.; adj. General Outdoor Adv. Co., and bldg. occupied by Kahlmeyer Bros. Material Co. damaged	70
Paoli, Ind.—Edgerton Mfg. Co. destroyed	80
Dawson Creek, B. C.—U. S. Army Engineering Dept., post garage, destroyed	450
Medicine Hat, Alta.—Two barrack blocks in prisoner-of-war compound in prison camp damaged	50
Buffalo, N. Y.—Genesee Arcade bowling alleys destroyed	50

BRAXMAR BADGES

Standard for over 64 years

JOHN O. VEIT
President

Why you should buy a badge now

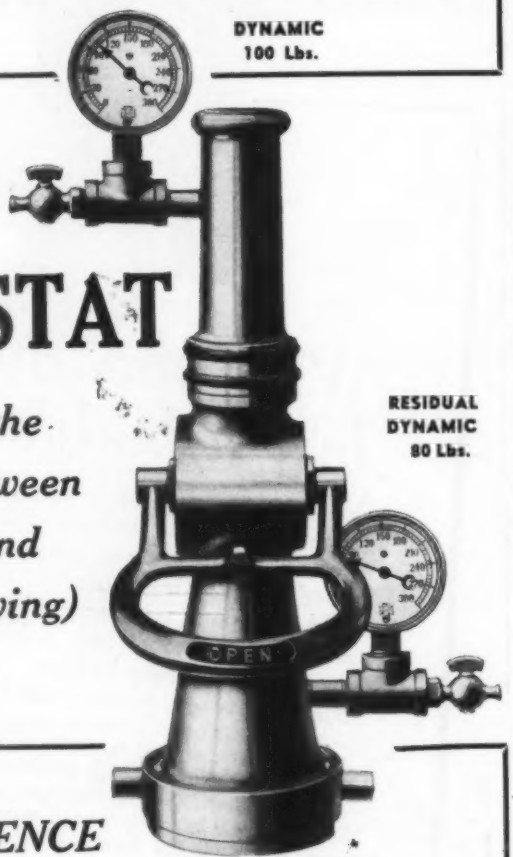
WE believe you should buy a badge now because we can now offer you badges of sterling silver, sterling silver gold plated, rolled gold on sterling silver and 14 karat gold. The finest badges you have ever been able to buy, and at only a few cents over the cost of ordinary badges.

Our blue catalog is the last available for the duration. If you do not have new price list as of July, 1943, we will be glad to mail you our latest price list. As we cannot publish a new catalog we have a circular illustrating the most popular fire badges, which we will be glad to mail upon request. (No auto plates for the duration—no catalogs for the duration.)

BRAXMAR BADGES

Standard for over 64 years
C. G. BRAXMAR CO., Inc.
242 W. 55th St., New York 19, N. Y.

In Case of Fire— What Will Your Water Lines Actually DELIVER?



Only DYNA-STAT

will indicate the difference between Static (line) and Dynamic (flowing) pressure

This DIFFERENCE is IMPORTANT to YOU!

Consider one series of tests scientifically conducted with DYNA-STAT. The results showed that out of 14 hydrants tested only 3 were satisfactory. Of the rest, three showed faulty deliveries resulting from 90% or more pressure loss, the rest averaging 50% loss. Remember—no pumper would pull thru these outlets where faulty flow exists, a greater volume than a comparative line pressure would push thru that same outlet.

A summary of these tests will be mailed on request.

VULCO PRODUCTS CO.

407 W. 36th ST. NEW YORK 18, N. Y.

Classified Advertisements

Bids Wanted, For Sale and Help Wanted, $5 per inch. Position Wanted, $2.50 per inch

WANTED

Fire Equipment Supply Companies, to sell Morning Pride Protected Rubber Firecoats, with Wing Sleeves, Chest Protector, Face Protecting Collar, Wool Wristlets, Double Shoulders, No Dirt Pockets. Also Firepants and Mitts. Write Morning Pride Mfg. Co., 1986 Home Ave., Dayton 7, Ohio.

CHIMNEY POWDER

No need to send men on the roof for chimney fires. Has-Mor Soot Destroyer not only puts the fire out, it continues to work until it cleans the chimney, making it unnecessary to go back to another chimney fire. Put up in handy packages. Agents wanted. Harry S. Morgan, 52 Broad St., Johnson City, N. Y.

POSITION WANTED

An experienced Fire Protection Engineer and former Fire Chief, with 16 years experience, gained in both municipal and industrial plant protection fields, wishes connection with a post-war future. Box 65 c/o FIRE ENGINEERING, 24 West 40th St., New York 18, N. Y.

POSITION WANTED

Captain with twenty-five years experience in large City desires Post War position, as Drill master, or as Chief in large plant. Thoroughly acquainted with salvage and all phases of the fire game. 46 years of age. Address P. O. Box 70, c/o FIRE ENGINEERING, 24 West 40th St., New York 18, N. Y.

WANTED

Steam Fire Engine, Horse-drawn or Mounted on truck with upright steam boiler. Ben Markley, Route 1, Box 466, Joplin, Mo.

FOR SALE FIRE DEPARTMENT SUPPLIES

Portable Pumps, Floodlight Generators and systems. Double Jacket Fire Hose, Booster Hose, Coats, Helmets, Masks, Fog Nozzles, Sirens, complete line of Fire Department supplies. Box 30, c/o FIRE ENGINEERING, 24 W. 40th St., New York 18, N. Y.

HOSE SALESMAN WANTED

Old established fire hose manufacturer is looking for a good man to handle Texas and Oklahoma territory on an exclusive basis. Write fully, in confidence, to Box No. 75, c/o FIRE ENGINEERING, 24 W. 40th st., New York 18, N. Y.

Nasnville, Ark.—Peach packing shed of Cooley Bros. orchard destroyed	60
Post Falls, Ida.—Post Falls Lumber & Manufacturing Co. destroyed	60
Pulaski, Va.—Oak Flooring Plant, The Holiness Church and dwellings damaged	125
Nominigue, Que.—Bellerive Veneer & Plywood Co. damaged	80
Glasgow, Ky.—Moran Motor Co. damaged	60
Norton, Mass.—J. R. Kilburn Glass Co., Inc., destroyed	50
Meyersdale, Pa.—Candy mfg. and jobbing plant of J. M. Cook & Sons, Inc., destroyed	50
Philadelphia, Pa.—Berman Carpet Co.; Horrow Novelty Co. and Gibson Junk Co. yard and storehouse damaged	450
Norfolk, Va.—Main warehouse, hide house, storage warehouse and rendering plant damaged	90
Ruthven, Ia.—Ruthven Independent grade and high school destroyed	80
Fresno, Cal.—Sunland Sulphur Co., damaged	50
Miami, Fla.—French Benzol Cleaners plant damaged	80

Warrensville Heights, Ohio—Five barns and kitchen at North Randall Race Track destroyed 125
Plymouth, Pa.—Plymouth Mill & Grain Co. destroyed; also, Frantz Automobile Co... 80
Appleton, Wis.—Section of Liethen Grain Co. plant destroyed..... 80
New Westminster, B. C.—Gypsum Lime & Alabastine Co. of Canada, Ltd., destroyed; also wharf of Home Oil Co. and several fishermen's shacks damaged. 425
Saint Andrews, N. B.—All bldgs. of Vaughan Shipbuilding Co. destroyed.... 425
St. Hypolice, Que.—Commercial and residential bldgs. destroyed..... 50
Val d'Or, Que.—Eight houses and one store, nearby Cadillac, damaged..... 50
Parchman, Miss.—Machine shop, four seeded cotton houses, shoe shop, eight-stand gin and cotton shed of State Penal Farm damaged 250
Norristown, Pa.—Reisman Bros. pretzel factory damaged; also two houses..... 125
Chicago, Ill.—Apollo Theatre damaged.... 80
Sacramento, Cal.—Warehouse and plant of Best Foods Corp. damaged..... 225
Park Ridge, Ill.—Administrative bldg. of Douglas aircraft plant destroyed..... 1250
Atlanta, Ga.—Simmons Plating Works damaged; also Southern Merchandise Co. 125
Charlotte, N. C.—Raylass Dept. Store damaged 50
Alfred, Ont.—St. Joseph's Industrial School and a church damaged..... 170
Gladbrook, Ia.—Barn on farm of Rudolph Delfs destroyed 50
Owensboro, Ky.—Grain elevator plant of Murphy Grain & Milling Co. destroyed.. 50
Russell, Ky.—Bellefonte sub-station of Kentucky-West Va. Power Co. damaged.... 50
Woodbridge, N. J.—Eight coal hoppers and loading trestle of Philadelphia & Reading Railroad; also four storage bldgs. of Port Reading Coal Co. destroyed..... 80
Springfield, Ill.—Tamms Silica Co. and Capital Box Co. damaged..... 170
Cleveland, Ohio—Plant of National Smelting Co. damaged..... 125
Portland, Ore.—Portland Fabricating Co. damaged 50
Galesburg, Ill.—Four bldgs. of Butter Manufacturing Plant destroyed..... 450
Shreveport, La.—Red River Lumber Co. damaged 60
Toledo, Ohio—X-ray inspection laboratory of American Propeller Corp. damaged... 250
Collierville, Tenn.—Stamps Motor Co., Harrell's Store, Mann Bros. warehouse, City Cafe, Hall's Grocery & Market, Jamison Grocery & Market and Collierville Frozen Food Lockers destroyed..... 50
Hart, Tex.—Farmers Grain Co. elevator destroyed 80
Clifton Forge, Va.—City Ice & Fuel Co. plant, County courthouse, Seacrest Monument Works, Lane's barber shop and two apartments in same bldg., Woolwine Market, dwelling and Clifton Forge Milling & Feed Co. destroyed..... 225
Sacramento, Cal.—Boone Moving & Storage Co. warehouse, Eagles Hall, Matthias Bldg. damaged 175
Albuquerque, N. M.—Railway Ice Co. plant in Belen destroyed..... 450

Three Burned in Fire at Refinery

Blazing fumes spread through an underground piping system at the new high octane gasoline refinery of the Sun Oil Company in Marcus Hook, Pa., on August 13 after an explosion which blew out all the windows in the compression building.

Burning vapor which escaped from vents covered large areas inside the plant grounds and vicinity, and three workers crossing the danger zone in a truck were caught in a sudden burst of flaming butane gas and were badly burned.

The explosion occurred when some liquid butane gas was being drawn from one of the spheroid containers into the compressing system.

Raleigh Heacock, Chief Marshal of the Sun Company's fire department, said employees ran to the valves to shut off the other spheroids. The liquid butane, kicked back into the sewerage system of the plant, volatized, sending out inflammable fumes through all the open vents. A passing automobile's backfire set fire to one of the pockets of fumes.

GOODALL Helps You Fight It With Greater *Safety and Comfort!*

Goodall fire hose is built to assure an ***extra*** margin of safety against excessive pressures, punctures and other service hazards. Goodall boots and clothing are also ***made to take it***, and, in addition, provide a full measure of comfort that makes easier the firefighter's work. A few of the more widely used items are briefly described below.

GOODALL FIRE HOSE . . .
Every length backed by a reputation for ***quality*** that has won the confidence of the Nations' firefighters.

COTTON RUBBER LINED . . .
Single or Double Jacket With or Without Underwriters' label.

CHEMICAL ENGINE OR BOOSTER . . .
"76" Brand—Wrapped construction "Stonewall" Brand — Moulded and braided construction.

FIRE ENGINE SUCTION HOSE . . .
Style S-45—Smooth bore for fast suction. Highly resistant to crushing.

UNDERWRITERS' UNLINED LINEN . . .
"Atlantic" Brand — Yellow Label. Highest quality long-line flax.
"Pacific" Brand—Green Label. 100% pure tow flax.

GOODALL FIREMEN'S BOOTS . . .
"S.S.S." Brand—Rugged, hard-wearing boots for Super Severe Service. Strong wood "Ladder Shanks" reinforce arches to prevent strain and fatigue on long ladder "stands". Thick, wide guards at shank, for protection against punctures. Black slip-proof soles. Inside and outside gum knee patch.

GOODALL FIRE COAT . . .
Style "SSS"—Dull finish black rubber. Lightweight, comfortable. Length, 46". Sizes, 34 to 46.

Contact Our Nearest Branch or Main Office for Details.

GOODALL RUBBER COMPANY — INCORPORATED

MAIN OFFICE — 6 S. 38th STREET, PHILADELPHIA 4, PA.
THE GOODALL-WHITEHEAD COMPANIES
New York - - Chicago - - Pittsburgh - - Boston
Goodall Rubber Co. of Calif. - Goodall Rubber Co. of Texas

GOODALL RUBBER CO. INC.

WE ARE PARTICIPANTS IN THE OWNERSHIP AND OPERATION OF THE NATIONAL SYNTHETIC RUBBER CORPORATION

Factory—Trenton, N. J. (Est. 1870) 74 Years of "Know How"—Our Most Valuable Commodity

E-X-P-A-N-D
with
BUCKEYE
HERE is the Expander we would like to demonstrate to you at the Convention if you are not already familiar with it.
Typically Buckeye in design, this Expander does more work, since only one is required for various sizes of hose. Only a simple change of segment assembly is necessary for different hose sizes.
Ask about these and other important design details when we see you at the Convention.
Buckeye
FIRE DEPARTMENT ACCESSORIES
BUCKEYE IRON AND BRASS WORKS
DAYTON 2, OHIO

Exhibit at Grand Rapids to Be Outstanding

The exhibit of fire equipment at the Grand Rapids Conference of the International Association of Fire Chiefs will be considerably larger than others staged in recent years. Already over forty manufacturers have signed up, and more are in prospect.

Chief James T. Keegan

Chief James T. Keegan, Chairman of Exhibits, reports the following concerns as having reserved exhibit space up to the time this issue closed for press:

American District Telegraph Company
American-Marsh Pumps, Inc.
American Fire Apparatus Company
American-LaFrance-Foamite Corporation
Anderson Fire-Fighting Equipment Company, Inc.
Akron Brass Manufacturing Company, Inc.
Atlas Safety Equipment Company, Inc.
Bi-Lateral Fire Hose Company
Buffalo Fire Appliance Corporation
Buckeye Iron & Brass Works
Circul-Air Corporation
C-O-TWO Fire Equipment Company
Cardox Corporation
Dayton Fire Equipment Company
Duo Safety Ladder Corporation
Elkhart Brass Manufacturing Company, Inc.
Eureka Fire Hose Division, U. S. Rubber Company
E & J Manufacturing Company
J. H. Emerson Company
John Bean Manufacturing Company (Div. of Food Machinery Corp.)
Gamewell Company.
General Detroit Corporation
Homelite Corporation
Kerotest Manufacturing Company
Midwestern Manufacturing Company
Mine Safety Appliances Company
Mack Manufacturing Corporation
Morning Pride Manufacturing Company
Herman Nelson Corporation
Oren Fire Apparatus Company
Paradise Manufacturing Company
Peter Pirsch & Sons Company
Pyrene Manufacturing Company
Rockwood Sprinkler Company
Seagrave Corporation
D. B. Smith & Company
Superior Fire Equipment Corporation
Ward LaFrance Div., Great American Industries, Inc.
Welders Service, Inc., National Fire Equipment Div.
Wooster Brass Company
Waterous Company
FIRE ENGINEERING

Vallejo, Cal., is planning the erection of a fire station to cost $14,000. The Federal Works Agency has granted funds.

SPECIAL BINDERS AGAIN AVAILABLE

Every issue of FIRE ENGINEERING has something you may want for future reference. With one of these standard handy binders, you will have every article at your fingertips and a complete index of everything published during the year. The binder holds 24 issues and two yearly indexes. **Price $2.25**

BOOK DEPT.
CASE-SHEPPERD-MANN PUBLISHING CORP.
24 WEST 40th STREET, NEW YORK 18, N. Y.

The Round Table

(*Continued from page* 561)

feel that since the war, we have had no trouble of this type.

We feel that through the education of Boy Scouts, school work, etc., that we are receiving the cooperation of children in curbing the practice of setting grass, trash or other types of fires.

L. M. Funk, Chief, Dallas, Tex.: Since Pearl Harbor there has been a decided increase in the number of small fires set by boys of high school age and also a decided increase in the number of false alarms turned in by this same group. The fires consisted largely of grass, trash cans, etc., and in but a few instances was there any damage sustained to property other than fences or shrubs. However, in responding to the false alarms, many traffic accidents occurred. This increase has averaged about twenty per cent in both instances—fires and false alarms. However, in the last few months, each of these items has decreased due to the original gangs having reached military induction age.

In an effort to solve this problem, various steps were taken, none of which produced results. In fact, the more kind endeavors were practiced, the greater the offenses became. We have no methods to recommend to others for the control of this problem. The Selective Service has been a great boon in taking the original leaders of these gangs.

George E. Jacob, Chief, Canton, Ohio: The following is taken from our records of fires started by children: In 1930, there were seventeen fires; in 1931, twelve; in 1932, seven; in 1933, ten; 1934, twelve; 1935, thirteen; 1936, sixteen; 1937, twelve; 1938, ten; 1939, five; 1940, nine; 1941, four; 1942, twenty; 1943, eighteen.

When we discover that a child is responsible for starting a fire, the parents as well as the child are talked to. In some cases both child and parents are called into the office. This plan may not be the answer, but to date, we have not had repeaters.

I believe that one of the main contributing factors to this form of delinquency is the fact that in many cases both parents are working and are unable to provide proper supervision for their children.

Edward F. Dahill, Chief, New Bedford, Mass.: Our city has acquired by tax titles several abandoned cotton mills. We have organized and have established supervised play centers in these mills, where youth and children will be free to enjoy recreation facilities and will be given talks on fire prevention and other useful subjects.

C. W. Ogborn, Chief, Columbus, Ohio: There has been a slight, but not alarming, increase in fires caused by children, as shown in the following figures: In 1940, 150 fires were caused by children; in 1941, 154; in 1942, 171; in 1943, 190 and in 1944 (the first six months), 78.

Offenders are turned over to the Juvenile Bureau of the Police Department for future supervision.

We are combatting this problem with motion pictures and speakers appearing in the school rooms and at Boy Scout and Girl Scout meetings.

FIREMEN PREFER The FAMOUS ACME FULL VISION All-Purpose Type FD GAS MASKS

BACK THE INVASION
BUY BONDS

APPROVED BY U. S. BUREAU of MINES

Firemen wearing the Acme FULL VISION All-Purpose Type FD Gas Masks when entering burning buildings, or other hazardous places, are praising the merits of this popular Mask. They have learned by experience that the protective qualities of this Mask are outstanding in every respect.

They also know that the Wide, Flat, FULL VISION Safety Glass Lenses, found exclusively in Acme Masks, DO NOT distort their vision, a feature that means much in smoke-filled areas.

The Acme FULL VISION All-Purpose Type FD Gas Masks provide protection against Carbon Monoxide, Organic Vapors, Acid Gases, Toxic Smokes, Fumes, and Smoke Suffocation. These Masks are approved by the U. S. Bureau of Mines for your safety.

WRITE FOR ILLUSTRATED FOLDER and PRICES

ACME PROTECTION EQUIPMENT COMPANY, INC.
Manufacturers
3516 LIBERTY AVENUE Cable Address ACMEPROCO PITTSBURGH, PA., U.S.A.

SIRENO
PRECISION MADE ELECTRIC SIRENS
THE UTMOST IN DEPENDABILITY AND LONG LIFE
THE SIRENO CO., Inc.
214 WILLIAM STREET
NEW YORK CITY

SIRENO WITH 7" RED FLASHING LIGHT

THE MAIN JOB . . .

The National Board of Fire Underwriters estimates that fire losses in the United States leaped upward $72,191,000 between April 30, 1943, and April 30, 1944 . . . *a jump of more than 22%* in one year. The total loss between those dates was $396,554,000. That is equivalent to burning up 79,310 five-thousand-dollar homes.

These figures are an unmistakable "general alarm" to redouble our vigilance against sabotage and carelessness. Turning this destructive trend downward is the *main job* now facing every Fire-fighter and manufacturer of Fire Fighting Equipment in the United States.

It must be done!

For consistent, reliable performance, standardize on Hale Fire Pumps.

HALE
FIRE PUMP COMPANY
Conshohocken, Pa.

VOLESKE
Fireman's Bar Cutter

The last word in forcible entry equipment, the Voleske Bar Cutter will enable your department to step-up its effectiveness in getting to the heart of the blaze.

MOST EFFICIENT CUTTING TOOL AVAILABLE!

★

WEIGHS ONLY 19 lbs.

CUTS ¾" STEEL BARS and CABLES IN 18 SEC.

★

BALL BEARINGS REDUCE POWER REQUIREMENTS 20%

★

VOLESKE TOOL COMPANY
2130 N. W. YORK STREET PORTLAND, ORE.

William F. Cowden, Chief, Philadelphia, Pa.: There has been a decided increase in fires, and also in fires directly responsible to children. However, we tabulate all fires caused by children under the one heading. This includes playing with fire, or maliciously igniting fields, lots, buildings, etc.

The percentage of increase due to juvenile delinquency does not appear to be much over any previous year's record.

M. J. Hayden, Chief, Bridgeport, Conn.: I don't believe there is any increase in fire setting in Bridgeport. What happens here is careless handling of fires, causing grass fires.

I would describe it as vandalism. The youngsters set fires just to see the apparatus work. Large dump fires caused by juveniles are giving the most trouble.

I have asked the police to patrol the section frequently, and they are doing so with good results.

I believe the problem can be solved to a great degree through the schools and through the Boy Scout organization.

Leo R. Barry, Chief, Utica, N. Y.: We have noticed no increase in juvenile fire setting in our city.

However, it has been our policy in the investigation of fire causes, where children are involved, to talk to the children and parents regarding fire danger.

If the children were of pre-school age, cooperation of the parents was invited and measures taken to impress upon the children that they had done wrong.

When school age children were involved, we would not only talk to them personally and contact their parents but would take the matter up with their school principal and teachers. This has brought excellent results.

Cooperation of the Police Department with older troublemakers is somewhat desirable.

Thomas J. Phelan, Chief, Trenton, N. J.: We have not had any more than the usual run of cases for a period of years. When we have a case of this sort, we turn the matter over to the police for investigation.

Edmund B. Lewis, Chief, Scranton, Pa.: We have not had in increase in fire setting by juveniles. Instead they have decreased in the last couple of years.

John A. Slattery, Chief, Rochester, N. Y.: We have had no noticeable gain in fires set by juveniles, since the United States entered the war.

Such cases are handled in the Children's Court, the information taken from the records of the Fire Prevention Bureau being filed with Children's Court investigators, who investigate all cases before further action is taken.

William H. Davis, Chief, Bureau of Fire, Pittsburgh, Pa.: I am happy to say that no increase in fire setting by juveniles is noticeable in Pittsburgh. To be sure, they do enter vacant houses and sometimes fire result, but I would not say there is an increase.

Juvenile delinquency in Pittsburgh has taken the form of terrific destruction of property, mostly public. Parks, swimming pools and recreation centers have been the chief sufferers in this respect, along with some private property.

False alarms transmitted by children

in the seven to twelve year group are on the increase.

The local newspapers are campaigning to educate the parents of these delinquents and juvenile court officers are active. Jail for the parents has been advocated by one high public official.

* * *

Answers to Previous Questions

The following replies are in answer to a previous question on firemen working on their off shifts.

Thomas M. Lane, Chief, Alameda, Cal.: The problem submitted covers debatable conditions which may or may not exist in any particular locality, such as: the manufacture of war munitions, the presence of shipyards, warehouses loaded with war supplies, government housing units, etc., and their value to the war prosecution as considered by our Army and Navy forces, as well as the strength of the local fire department in coping with any fire situation which might occur.

Our city which was mostly a residential locality before the war with a few manufacturing industries and a population slightly over 36,000, has almost overnight found itself a vital war production center with shipyards, government warehouses, government housing units, and a population of 54,000 with the chances that it will soar still higher before the end of the war.

During this rapid expansion of industry, population, etc., the Federal Government has found it necessary to acquire property for its use, which has removed property from our tax rolls and brought down our city revenue to such an extent that it is impossible for us to increase the strength of our fire department to afford protection to these new war industries. Our off-shift firemen will have to hold themselves in readiness to respond immediately in the event of a major fire within our city, or in accordance with our mutual aid agreements with adjacent cities and towns.

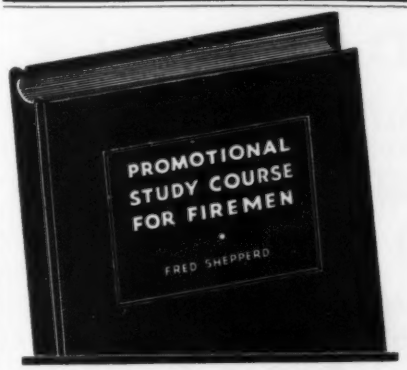
I cannot believe that either the fire department or the outside industry will benefit through a fireman working during his off-duty periods, because either one or the other of us probably will obtain the services of an employee who is tired and not alert to his duties. Because of this the chances of sickness or injury to himself or others are a continual hazard.

As it applies to our fire department, which maintains sickness, injury and pension protection, there would be a chance that if disabled for any cause while at this outside industry, the firemen would, if possible, conceal the disability until he reported back to his position in the fire department, and as a result, the fire department would be the one to shoulder the problem as it covers all liabilities, whereas the outside industry does not. In addition, the firemen were placed on the two platoon system so they would be off duty, away from the twenty-four hour service, in order that they would have a chance to be with their families, have a period of rest while off duty and be given a chance to rest up—definitely not to work halfheartedly for some other industry while off duty.

An absolutely dependable, tried and proven siren for communities of all sizes. Loud, clear, simple to instal and no maintenance to bother with. Embodying the "know how" of the oldest and largest makers of siren signals in the fire field. Write for descriptive literature and list of towns using the model "M".

ALSO manufacturers of a complete line of apparatus sirens. Write for literature.

STERLING SIREN FIRE ALARM CO., Inc.
55 Allen Street Rochester, New York



A BIBLE OF INSTRUCTION

- *For the Chief who wants to train his men*
- *For the ambitious Fire Fighter studying for promotion*

350 Pages - Cloth Bound

By Fred Shepperd. Published in response to numerous requests from fire department officers and men working for advancement, this new book embraces the famous "Promotional Study Course" which ran serially in FIRE ENGINEERING and proved to be so tremendously popular. Covering in chapter lessons most of the important phases of fire protection promotional study — mainly in questions and answers form, true or false statements — all of it is in the concise style generally used and preferred by civil service examiners.

To fire chiefs and other officials responsible for preparing examinations, this book will be found most helpful. And it is a mighty good reason, too, why fire officers and men should find it of inestimable value in studying for advancement.

$3.00 PER COPY POSTPAID

CASE-SHEPPERD-MANN PUBLISHING CORP.
24 WEST 40th STREET, NEW YORK 18, N. Y.

BOYER

HEADQUARTERS FOR
"DEPENDABLE"
FIRE APPARATUS AND
FIRE DEPARTMENT SUPPLIES

Above 500 gallon pumper, with mid-ship mounted pump, is typical of many Boyer has built for the U. S. Government.

BOYER FIRE APPARATUS CO.
LOGANSPORT INDIANA

DEPENDABILITY

DEPENDABILITY

COLT FIRE EQUIPMENT HAS AN OUTSTANDING RECORD FOR QUALITY AND SERVICEABILITY

Make Your Truck a Real Fire Weapon with Dependable Colt Equipment
Partial List Shown Below

- Colt Shut-Off Nozzles of All Types
- Little Giant Play Pipes
- Threaded Ring Leader Line Tips
- Single - Double Gate Valves
- Siamese Connections of All Types
- Suction Hose Connections
- Double Male and Double Female Connections
- Hose Adapters
- Reducers—Caps—Hose Nipples
- Expansion Ring Couplings
- Chemical Hose Couplings
- Special Nozzles and Connections to Your Specifications

EXCELSIOR BRASS MFG. CO.
3452-54 N. Knox Ave. Chicago, 41, Ill.
Makers of Fire Department Supplies for Over 30 Years

Members of the fire department, excepting those who have served their full time of twenty-five years, will not be granted a pension if they are disabled for any cause while engaged in another industry.

Herman C. Coppedge, Battalion Chief, Hobbs, N. M.: There is a shortage of manpower and we need every possible man to work in war plants, whether he be a fireman or not. The Government doesn't ask the soldiers about their pensions when they go to battle, so let us forget about the pensions and insurance until the war is over.

I believe that most large defense plants carry insurance on the men who work for them, so it wouldn't be right for the fireman who works in such a plant to draw a pension from the city if he became injured while working there.

R. E. Allen, Chief, Riverside, Cal.: I believe firemen should work in defense plants, providing that they are available when needed.

This will help relieve the manpower shortage and help in the war effort. The only disadvantage in this system is the fact that the men may be difficult to locate in case of a major fire.

Some of our men are working at such jobs, and are available to us on call. We have an agreement with the defense plant that the men must answer any call as ordered by the chief.

M. J. Hayden, Chief, Bridgeport, Conn.: In Bridgeport the Board of Fire Commissioners do not allow men to work at other jobs on off-hours, for fear of injury or in the event of a second alarm that they would not be available.. They may work overtime, however, in the department filling in for vacancies, and receive extra pay for same.

If a man was injured in a factory, I don't see how he would be entitled to all fire department rights unless the Fire Commissioners took action to grant them.

J. W. O'Hearn, Chief, Watertown, Mass.: I believe firemen should be permitted to work at private employment in defense industries when off duty.

I know of no disadvantages. The government needs reliable help. I believe the men are benefited by this extra employment as there is more contentment. I have found better physical condition and less demands for extra days off.

I do not believe that these men should be entitled to full fire department pension rights if injured in defense plants. This is the chance the men must take, being injured outside their regular employment.

Herman E. Gutheim, Chief, Cambridge, Mass.: The Rules and Regulations of our department do not permit members to work at anything other than the fire department. I believe when a man joins a fire department, that it should be his whole work. He cannot give his best to the fire department and also to the outside concern.

There may be some cases where men are working outside the department on their off-time, but it has been stopped in every case where it has been known.

I do not believe the city should be liable for injuries and sickness which might be sustained when working out-

side the department. In my opinion, a man takes a long chance of jeopardizing his pension rights in so doing.

During the last war the rate of pay was about one-half what it is at the present time and living conditions are much better now than then so there is no chance to claim high cost of living.

James H. O'Neill, Chief, Niagara Falls, N. Y.: I believe firemen should be permitted to accept jobs in defense industries.

Advantages are only to the employer and the firemen. The big disadvantage is that if a man is injured while working some place else on his day-off, his services would be a loss to the department while he is disabled.

Members of this department are under the New York State Employees' Retirement System and would derive no benefits from the pension system (disability) if injured other than while on duty in the fire department. All members of this department, when accepting extra work in industry or other places on their day-off, know that they are not protected through the pension system if disabled by injuries suffered while working at a position other than their regular occupation.

J. J. Fitzpatrick, Chief, Pueblo, Colo.: I believe firemen should be permitted to work at outside employment. It helps the war effort and keeps men in good shape. They should not, however, be permitted to work if other men are available.

I believe the responsibility of taking care of disability claims rests with the firm that employs the firemen, rather than with the fire department.

S. J. Flores, Chief, Shreveport, La.: We permit firemen to work at outside employment on their off-duty.

I don't believe it good business, but it does alleviate the manpower shortage.

I don't believe the men should be entitled to full pension rights if injured in defense work or other outside work. The defense plant should take care of them.

A. C. DuRee, Chief, Long Beach, Cal.: I am in favor of firemen being permitted to work at private employment in defense industries when off-duty, provided their employment is in daylight hours and that the type of work will not exhaust them physically to the point it would reflect in their efficiency as firemen.

However, our city charter specifically prohibits outside employment while in the employ of the city.

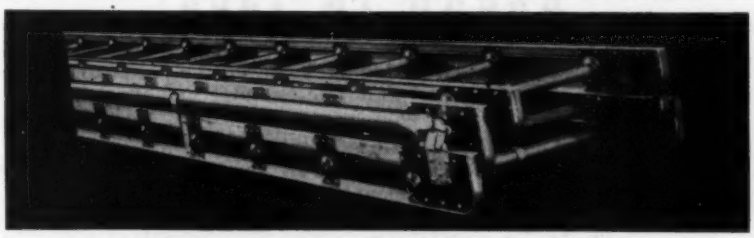
The benefits of such work, other than monetary, would be the utilization of spare time while off-duty for defense purposes in this area where the manpower shortage is acute. The disadvantages are in being out of contact for recall to duty if required and possible injury which would affect the fire department personnel when required to be on duty.

I am opposed to fire department pension or sick leave rights being granted for injuries while engaged in defense plant work while off-duty as firemen. This right is not granted members in the services or in the merchant marine, and I do not believe it should apply to firemen in defense industries.

320,000 CANDLE POWER OF LIGHT
The NITE-HAWK
. . . FOR NIGHT FIRE FIGHTING
PORTABLE, ENGINE DRIVEN POWER PLANT

Towed at truck or auto speed, this self-generating power plant goes to the fire with you — gives you ample light for fighting night fires. Four 1,000-watt, 80,000 candle power, wide-angle floodlights provide an even flow of light over a wide area. Each light individually operated and adjustable up and down, and in all directions. Lights may be removed and taken into building on extension cords and tripods. Also, a control panel with receptacles gives you power at 110 volts for operating electric tools, like saws and metal cutters. This Nite-Hawk is also available with two 80,000 candle power floodlights and a 7 million candle power searchlight. Write for Bulletin NH5E.

NITE HAWK
Lister-Blackstone
INCORPORATED 1706 SO. 68TH ST., MILWAUKEE 14, WIS.
MFRS. OF PORTABLE NITE-HAWK AERO-STARTERS, SEARCHLIGHT AND FLOODLIGHT UNITS
ALSO DIESEL ENGINES AND DIESEL-ELECTRIC POWER PLANTS



Again Available
STRONG-LIGHTWEIGHT
Aluminum Ladders

★ Reallocation of aluminum by the government permits the manufacture of a limited number of fire department and industrial ladders. The three section, aluminum, heavy duty extension ladder illustrated is type 3 EL. Its unusual strength combined with remarkable light weight makes it one of the most popular fire ladders ever designed. Because of these characteristics . . .

. . . a 65 foot ladder of this type can easily be raised by four men and a supervisor — an impossible feat with ladders not made of aluminum.

FOR GREATER SAFETY AND EASE OF HANDLING

The locks operate automatically at any desired point during ladder extension. The rope and flexible cable are arranged for simultaneous automatic extension of both flies.

★ ★ ★

Write for information on standard sizes and aluminum ladders built to specifications.

Aluminum Ladder Company
200 Carbis Street
Worthington, Pennsylvania

OUR POST-WAR PLANNING BEGAN IN 1902!

Our plans for the post-war period are based upon a policy to which we pledged ourselves 42 years ago—to devote our time and effort to only the very finest grade of fire fighting equipment.

The force of this policy has carried Elkhart to its present position of leadership. Our plant is today the largest in America devoted exclusively to the manufacture of such equipment.

No other company offers a more complete line of fire protection equipment—nor wider distribution. Hardly an alarm sounds in this country that does not call some Elkhart product into play, while the armed services have carried our equipment to the four corners of the earth.

Our post-war products, like our pre-war products, will incorporate the best materials, the finest workmanship, the latest developments. It is not too early for you who are planning on new equipment to make your wants known. We can offer you valuable help in your planning.

ELKHART BRASS MFG. CO. Inc.

ELKHART, INDIANA

ADVERTISING INDEX

AUGUST, 1944

	Page
Acme Protection Equipment Co., Inc.	611
Akron Brass Mfg. Co., Inc.	491
Aluminum Ladder Co.	615
American Car & Foundry Co. Hall-Scott Div.	514
American Fire Apparatus Co.	579
American La-France-Foamite Corp.	480-481-499
American Marsh Pumps, Inc.	577
American Rubber Mfg. Co.	515
Anderson Fire Fight. Equip. Co., Inc.	482
Atlas Safety Equipment Co., Inc.	581
Bean Mfg. Co.	476-477
Bendix-Westinghouse Automotive Air Brake Co.	511
Bi-Lateral Fire Hose Co.	584
Boyer Fire Apparatus Co.	614
Braxmar Co., Inc., C. G.	607
Buckeye Iron & Brass Works	610
Buffalo Fire Appliance Corp.	495
C-O-Two Fire Equipment Co.	509
Cairns & Brother	580
Cardox Corp.	510
Carpenter Mfg. Co.	589
Circul-Air Corp.	587
Cover, H. S.	584
Curtis & Sons, L. N.	575
Dayton Fire Equipment Co.	595
DuGas Engineering Corp.	576
Duo-Safety Ladder Corp.	475
E & J Mfg. Co.	487
Eastman Company, Inc., Samuel	498
Eddy Valve Co.	592
Elkhart Brass Mfg. Co.	616
Emerson Co., J. H.	Inside Front Cover
Eureka Fire Hose Div. U. S. Rub. Co.	512
Excelsior Brass Mfg. Co.	614
Federal Electric Co.	473
Fog Nozzle Co.	Back Cover
Food Machinery Corp.	506
Four Wheel Drive Auto Co.	3rd Cover
Fulton Bag & Cotton Mills	594
Fyr-Fyter Co.	592
Galvin Mfg. Corp.	483
Gamewell Company	518
Gebauer Chemical Co.	596
General Detroit Corp.	571
General Fire Truck Co.	573
Goodall Rubber Co.	609
H. O. R. Company	578
Hahn Motors, Inc.	505
Hale Fire Pump Co.	612
Hall-Scott Motor Car Co.	514
Hardie Mfg. Co.	504
Harrington Signal Co.	588
Herman-Nelson Corp., The	508
Homelite Corp.	516
Janesville Apparel Co.	586
Kellam Mfg. Co.	606
Kidde & Co., Walter	503
Koehler Mfg. Co.	596
Link, Fred M.	583
Lister-Blackstone, Inc.	615
M. & H. Valve & Fittings Co.	570
McIntire Brass Works, E. N.	591
Mack Mfg. Corp.	484-485
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.	586
Maxim Motor Co.	486
Mid-States Equipment Co.	572
Midwestern Mfg. Co.	603
Mine Safety Appliances Co.	502
National Foam System, Inc.	500
National Powder Extinguisher Corp.	494
Oren Fire Apparatus Co.	479
Pacific Marine Supply Co.	605
Paradise Mfg. Co.	582
Pirsch & Sons Co., Peter	501
Porter, Inc., H. K.	604
Powhattan Brass Mfg. Co.	597
Quaker Rubber Corp.	594
RCA Victor Div. Radio Corp. of Am.	585
Republic Rubber Div. of Lee Rubber & Tire Corp.	593
Rockwood Sprinkler Co.	478
Seagrave Corp.	488-489
Sealand Corp.	590
Security Fire Equipment Co.	598
Sireno Co.	611
Smith & Co., D. B.	517
Southern Switch & Signal Co.	601
Sterling Siren Fire Alarm Co., Inc.	613
Superior Fire Equipment Corp.	574
Thornton Tandem Co.	599
U C Lite Mfg. Co.	600
U. S. Motors, Inc.	588
Voleske Tool Co.	612
Vulco Products Co.	608
Ward LaFrance Truck Corp.	492-493
Waterous Co.	496-497
Welded Serv. Co., Natl. Fire Eq. Div.	513
Wentworth-Forman Co., Inc.	590
Wooster Brass Co.	507
Young Fire Equipment Corp., formerly Cayasler Mfg. Corp.	490

Seconds count... power counts... safety counts when fires rage. And the reason FWD fire apparatus counts so big in successful fire fighting is that every FWD has plenty of *reserve* speed, power, traction and safety to meet any emergency in getting to the fire and doing its vital part in the fighting business. No grade is too steep, no mud or snow too deep, no road too slippery, no going too tough for the dependable combination of speed - power - traction - safety which FWDs' offer. Their fire-fighting records in cities and towns from coast to coast warrant your confidence in the complete line... all types and sizes, with rotary or centrifugal pumpers, triple or quadruple combinations, aerials, etc.... and POWER on All-wheels! Write for literature.

THE FOUR WHEEL DRIVE AUTO CO., Clintonville, Wis. *Canadian Factory: Kitchener, Ontario*

BUY MORE WAR BONDS

The City of Shawano, Wis. enjoys Fire Protection from this FWD Model KHR, 750 GPM 2-stage centrifugal pumper and chemical fire fighter.

FWD

ARMY NAVY

THE FASTER · SAFER FOUR-WHEEL-DRIVE *Fire Apparatus*

You're Right *Chief*

WATERFOG

Really protected ME from the heat, gas and smoke that time"

IS your department modernized with WATER FOGNOZLS and FOGNOZL EXTENSION APPLICATORS?

Under recent WPB rulings Civilian Fire Departments can get sufficiently high priorities to purchase this equipment.

EVERY CHIEF KNOWS

WATERFOG from FOGNOZLS and FOGNOZL EXTENSION APPLICATORS always——

- Gives maximum protection to his men.
- Puts the Fire out quickly.
- Uses the minimum of water.

Write us today

ORIGINAL WATER FOGNOZL

FOG NOZZLE COMPANY

1520 EAST SLAUSON AVENUE • LOS ANGELES 11, CALIFORNIA

FOG NOZZLE OF CANADA, LTD., MONTREAL, CANADA